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A COMPARISON OF THE CLASSROOM LANGUAGE OF SECOND- AND FIFTH-GRADE TEACHERS.

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DESCRIPTORS- *ELEMENTARY SCHOOL TEACHERS, TEACHER CHARACTERISTICS, *TEACHER BEHAVIOR, *LANGUAGE USAGE, CLASSROOM RESEARCH, *CLASSROOM COMMUNICATION, VERBAL COMMUNICATION, STRUCTURAL ANALYSIS, *LINGUISTIC PATTERNS, SPEECH HABITS, SYNTAX, SENTENCE STRUCTURE, ENGLISH,

A STUDY WAS DESIGNED TO EXAMINE THE LINGUISTICS STRUCTURE OF SECOND- AND FIFTH-GRADE TEACHERS' CLASSROOM LANGUAGE USING PROCEDURES THAT HAVE BEEN APPLIED IN RECENT STUDIES OF CHILDREN'S LANGUAGE (LOBAN, 1963 "THE LANGUAGE OF ELEMENTARY SCHOOL CHILDREN" ED 001 875). TEN SECOND-GRADE AND 11 FIFTH-GRADE TEACHERS IN A LARGE, SUBURBAN, PUBLIC SCHOOL DISTRICT WERE ENROLLED AS SUBJECTS IN THE STUDY. THE SUBJECTS WERE WOMEN, HAD A MEAN OF 10.3 YEARS OF TEACHING EXPERIENCE, HAD AT LEAST A BACHELOR'S DEGREE, AND WERE TEACHING IN CLASSROOMS FREE FROM UNUSUAL SITUATIONS. THE CLASSROOM LANGUAGE OF EACH TEACHER WAS UNOBTRUSIVELY TAPE-RECORDED FOR FIVE 40-MINUTE SESSIONS OF REGULAR CLASSROOM ACTIVITY. THE TAPES OF FOUR OF THE SESSIONS WERE TRANSCRIBED AND THE TRANSCRIPTS ANALYZED FOR--(1) NUMBER OF PHONOLOGICAL AND COMMUNICATION UNITS AND NUMBER OF NON-COMMUNICATION UNITS (MAZES), (2) PATTERNS OF STRUCTURE WITHIN THE COMMUNICATION UNITS (WORD ORDER), (3) WEIGHTED SUBORDINATION INDEX TO MEASURE THE USE OF PHRASES AND CLAUSES, AND (4) VOCABULARY DIVERSIFICATION. MAJOR FINDINGS WERE THAT SECOND-GRADE TEACHERS AS A GROUP AND FIFTH-GRADE TEACHERS AS A GROUP DO NOT DIFFER MARKEDLY IN TOTAL NUMBER OF WORDS USED, IN VOCABULARY DIVERSIFICATION, OR IN USE OF SUBORDINATION. ALL MAJOR ENGLISH SENTENCE PATTERNS WERE USED BY TEACHERS AT BOTH GRADE LEVELS. IT APPEARS THAT THE TEACHERS IN BOTH GRADES ARE USING NORMAL ADULT SPEECH PATTERNS THAT ARE NOT RELATED SPECIFICALLY TO ANY DIFFERENCES THAT MIGHT SEPARATE THEM FROM THEIR STUDENTS. THE INVESTIGATOR RECOMMENDS BOTH EXTENSION AND REPLICATION OF THIS STUDY (USING TEACHERS AT DIFFERENT GRADE LEVELS AND CONTROLLING FOR THE CONTENT OF THE CLASSROOM DISCUSSION) AND TEACHER-CHILD INTERACTION STUDIES WITH CRITERION MEASURES UNDER CAREFUL SCRUTINY. (JD)

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COOPERATIVE RESEARCH PROJECT S-331

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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John M. Kean

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Madison, Wisconsin

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CHAPTER I

BACKGROUND OF THE STUDY

Problem

School instruction is, by precept and by practice, primarily dependent upon communication in the form of language--written, printed, and spoken.[1] Indeed, most of the relevant variables of both instruction and consequent learning are tied to the language behavior of teachers and children. The nature of the school dictates that the language behavior, particularly the oral language behavior, be "relevant," that is, fitted within the context of the general constraints of the school as a social institution. Language behavior is an important, if obscure, aspect of the fabric of instructional approaches. Only in school or in a situation where "schooling" is in process, it is assumed, would such a set of particular language utterances probably occur. Thus the study of the language of children, as pupils, and of adults, as teachers seems highly relevant to improvement of many school practices (Davis and Kean, 1965).

In recent years, linguistically aware researchers have begun to describe children's language in terms of its structure and to relate this structure to peer interaction and to children's encounters with textbooks and other media. Studies have been undertaken of children's acquisition of grammar, the psychology of verbal learning, readability of materials, and construction of programed materials among others (Carroll, 1958a, 1960). Because of this productivity, a general increased sophistication in research, and prodigious dissemination of research reports, these efforts may eventually effect instruction.

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[1] The term language as used generally may imply the symbolism of computers, of mathematics, or the symbolic "corpus" of any science. But in this study it will be defined as "a system of patterned vocal behavior by means of which men cooperate in society" (Marckwardt, 1963, p. 17).

However, recent research on teachers' and children's verbal behavior in the classroom have ignored language research. While employing language as data, the researchers have concentrated upon classroom emotional climate, teacher-child interaction, logical structures and content analysis of teacher-child communication acts, and other dimensions of classroom operations. None of the paradigms developed by researchers to describe teacher behavior, particularly teacher verbal behavior, accounts for the linguistic structure of teachers' language as a variable and a possible controller of the content and interpretations of teachers' language and, consequently, the classroom verbal interaction of teachers and children. Indeed, it was more viable in terms of immediate need that these psychological and philosophical aspects of instruction be broached before moving into more "remote" variables that seemed less amenable to deliberate change.

Since language appears to be a critical attribute of teacher-child interactions, it is pertinent to ask several questions concerning its structure. Illustrative of these might be the following: To what extent is communication in the classroom effected by the differences between adult language structure and child language structure? Does the child use the teacher as a model in building his own linguistic repertoire? Is the language of the child in the classroom different from that of the child outside the classroom? To what extent are teachers aware of the linguistic components of their discourse? What systematic differences occur in the language of the classroom as a function of level of schooling, area of instruction, personality, cognitive ability, or linguistic awareness of teachers?

It would seem that none of the questions mentioned can be answered presently. Because so little is known about these questions, however academically intriguing they might be, this study was undertaken. It was not done to answer these questions, but to provide an empirical basis for designing studies that could answer them. It is predicated upon two rather fundamental presuppositions: (1) teaching acts in the classroom primarily involve the use of language (Aschner 1961, p. 112), and (2) a linguistic description of the language of the classroom is prior, logically, to studies of the use, recognition, causation, and contextual determination of this language (Postal, 1964, pp. 264-65; Carroll, 1964a, p. 124).

Consequently, the major objective of the study was the dimensionalization of teacher-spoken language, using criteria that have been applied to child language, as a first step in describing the interaction of teacher language and pupil language. And though children's language will continue to be the subject of increasingly complex examination, the present study and subsequent efforts may lead to the determination of the combinations of linguistic structures producing the most effective learning for certain instructional goals.

Objectives

The objectives of this study were: (a) to describe certain linguistic dimensions of second- and fifth-grade teachers' oral classroom language, and (b) to compare dimensions of the teachers' language at the two grade levels involved.

General Plan of the Study

The general plan of the study was to dimensionalize and describe the oral classroom language of ten second-grade and eleven fifth-grade teachers. The teachers were chosen from a large suburban system to control gross school and community effects. They were all women with a bachelor's degree, educated locally, and with at least one year of teaching experience. Their language was recorded for five forty-minute periods. Four of the five tapes from each teacher were transcribed and used in the linguistic analysis.

In the study, the dimensions used to describe teachers' language were primarily linguistic, although a measure of vocabulary diversity was also used. Linguistics generally refers to the description of the interrelationships and patterns which make up the intricate structure of the language through the analysis of phonology (sound system), morphology (word formation system), and syntax (word grouping or combining system). This study concentrated primarily upon syntax, although it was necessary to look at aspects of phonology and morphology. The descriptors were chosen, because in addition to describing the language, they seemed appropriate for studying such major variables in school learning as the relationships between teachers' language and children's language.

Related Literature

This review will (1) discuss linguistics and its relationship to psycholinguistic research, (2) suggest how linguistics has been applied in research on children's language in and out of school, (3) show the necessity for a linguistic study in terms of needed knowledge about teaching, and (4) suggest the relationships that linguistic knowledge might have t~~w~~o theories ~~to~~ of teaching, conceptualizations of teaching, and currently used behavioral criteria applied to teaching. The fourth point above will be more extensively examined in the discussion on the findings of this study.

Linguistic and Psycholinguistic Research

A growing volume of research on various aspects of children's language can establish a data source against which workable school programs can be validated. These studies on children's language have been made feasible by the systems developed to describe the nature of language and the ways people use it. Linguists such as Francis (1958), Hill (1958), Fries (1940), Lloyd and Warfel (1956), Trager and Smith (1951), Whitehall (1956), and Sledd (1959) have presented extensive outlines of the English language which would enable researchers to examine and code any particular speaker's utterances. While this descriptive work has enabled much educational research, an even more important development has come from verbal behavior theorists (Ausubel, 1963; Carroll, 1958c; Sapir, 1921; Vygotsky, 1962; Whorf, 1956) who have hypothesized and documented the relationship existing between cognitive behavior and language structure. More recently, linguistic structure has become a variable for psychological and educational research (e.g. Brown, 1958; Carroll, 1958a, c, 1964a; Sebeok, 1960). That language structures are learned has been well documented (Joos, 1964; Carroll, 1964a; Brown and Bellugi, 1964). Yet there seems to have been some reticence on the part of researchers, particularly educational researchers, to capitalize on the new linguistic techniques and the information from these theories. Some recent work in linguistic and learning research is illustrative of the basic directions of the recently burgeoning research on children's language which promises much needed clarification for instructional theory and practice.

Research on Children's Language

The relationship between cognitive behavior and language structure seems to be well established. Researchers such as those mentioned above tend to disagree only on the strength of the relationship. Some researchers have obtained results which both enhance the theory and suggest important dimensions which are not accounted for in classroom instruction. In a study of verbal conditioning, for instance, Baer and Goldfarb (1962) found that boys and girls at third-grade level increasingly used sentence structures which had been reinforced by investigator's praise, that girls at sixth- and tenth-grade levels continued to increase the use of reinforced structures, but that boys at sixth- and tenth-grade levels actually decreased in use of the reinforced structures. These results were related to modes of sex typing and identification as the children grew up. While not unexpected, such results do give impetus to the study of the teacher's language as an influence upon such results. In another study, Rosenbaum (1962) noted that student self-verbalization, peer-verbalization, group-verbalization, and teacher-verbalization facilitated recognition, but not recall of the content verbalized when students were tested some time later. However, the effects were differential by type of verbalization. Student self-verbalization produced the highest gain, while group-verbalization produced the lowest gain. The role of the teacher-verbalization remains somewhat ambiguous, but there does seem to be a suggestion (admittedly weak) of confounding due to classroom language.

Braun-Lemesch (1962) found that children used context to obtain meaning as they grew older, without reference to whether this context was taught to them or an acquired characteristic of their growth. Nor did he note the relationship of this use of context to children's understanding of their language structure. In fact, no relationship has as yet been found between children's awareness of language structure and any content now taught in schools (O'Donnell, 1962, 1963; Davis, Smith, and Bowers, 1964).

Yet, in the most comprehensive study to date, Watts (1944) demonstrated an intimate connection between language structure and mental development certainly related to ability to learn the content. He noted, for example, that as children increasingly use more complex sentence patterns, they not only become verbally flexible, but they also develop or, at least, demonstrate greater relational ability. Brown and Berko (1960), focusing on particular aspects of assigning words to parts-of-speech within grammatical structures, found that both age and the particular part-of-speech were specific determiners of whether the child would assign the word in context to its proper part-of-speech. Kean and Yamamoto

(1966) noted the same effect and further concluded that primary school girls used more specific parts-of-speech at first-grade level, while boys used more of the same parts-of-speech at the third-grade level. There can be little doubt that, in so far as language is the vehicle of learning, it can either facilitate or inhibit. Until quite recently, large amounts of data were not available to researchers to enable them to study the effects of language upon learning or upon language development in wide areas (Carroll, 1960a; Erwin and Miller, 1963; McCarthy, 1954).

Since 1958, there have been several monumental studies on children's language which deserve attention in this review since it is to them that the kinds of information that this study has explored eventually must be related.

Strickland (1962b) observed that children of all ages employ a variety of language patterns, some of which appear to be foundations of their subsequent language growth. For example, beginning school children studied by Strickland brought with them not only a complex language system, as suggested by Anderson (1941), but specifically, a rather complete grammar system. Strickland's results, as well as those of Riling (1965), raise questions about many of the reading materials of school children because of these materials' lack of congruence with the language children possess. Knowledge of teachers' classroom language structure could shed more light on this kind of incongruous relationship in classroom discourse.

Using essentially the same procedures as Strickland, Loban (1963) has reported generally upon children's language development from kindergarten through grade six. For example, he found that children speak more words each year, and more importantly, increase the number of communication units used as well as the average number of words in each unit. He further noted that language fluency differentiated between high and low language ability groups. The use of certain types of sentence patterns also differentiated between high and low ability groups. The linking verb was used more by the high language group than by the low language group; the expletive sentence had a low frequency for the low group; the outer complement pattern was used almost solely (if infrequently) by the high language group. No group used inner complement patterns. Loban also noted that, except for the linking verb and the use of partials, the differences in structural patterns used by the two groups were negligible. Nevertheless, elements within these patterns were used differently by low and high groups, thus indicating different levels of control of language. For subjects and complements, the high group utilized some clauses and infinitives, while the low group depended almost entirely upon nouns and pronouns. Boys in the low group were more limited in their syntactic ability than girls in the same group, while boys in the high group exceeded girls in the high group. Loban further concluded that complexity of grammatical structure was related both to age and to language proficiency.

Illustrative as these studies might be of the multidirectional approach taken toward language research today, they provide only a broad paradigm within which the present study has proceeded. The following section will review several studies more specifically related to teaching.

The Need for Research on the Linguistic Nature of Teachers' Language

Bellack (1963), Biddle and Ellena (1964), and Gage (1963) have emphasized the role of teachers in the instructional process and the need to develop adequate means of identifying the correlates and variables that influence their functioning. Moreover, Carroll's conclusion (1958b, p. 176) that investigations which involve verbal behavior "inevitably involve language as an (usually) unmanipulated independent variable," describes the plight in research on teaching today.

Understanding of and agreement upon the linguistic description of the language used by teachers seem a necessary requirement if researchers hope to analyze teaching adequately. To discuss teachers' language as a behavioristic model for language or as a cognitive and affective transmitter in the instructional process seems premature until basic information on the structure of teachers' language becomes available.

That children's basic language structure is established by the time they enter school is well established (Loban, 1963; Miller and Erwin, 1964). However, the role of the teacher in language learning cannot be dismissed casually; children's oral language (Hockett, 1960) and written language (Hunt, 1964) continue to develop until adolescence at least. The finding that concept learning and problem solving are related to the language in which questions are asked (Carroll, 1964b), the report that linguistic forms linked to social class induce differential learning (Bernstein, 1961, 1963), and the indication that children use different linguistic structures intramurally and extramurally (Joos, 1964), all demand the investigation of the role of teachers' language in learning.

Studies by Osgood (1960), Brown and Bellugi (1964), and Carroll (1958c) are suggestive of the need for linguistic knowledge of teachers' language. Osgood (1960) noted striking differences in language style as a result of markedly differing motivational conditions. He used among other things an index of subordination in finding that language structure tends to become more stereotyped (less complex) as situations become more emotionally charged. This finding suggests that efforts to get children "involved," and as often happens, to get them excited about what they are learning might in the long run reduce both the learning of the language and concepts, at least those that are highly complex and require qualification rather than generalization. On the other hand, since so little is known at present, it is entirely possible that language itself might be an indicator of motivation in the classroom.

In another vein, related more to models in language learning and language usage, Brown and Bellugi's (1964) finding that mothers "edit" their children's sentences to syntactically correct ones but leave the basic forms unchanged, suggests that teachers of young children may use a similar strategy in encouraging the development of culturally "appropriate" linguistic structures of children. There is also the possibility, however, that the child may shape the linguistic patterns of the adult. This latter prospect is underscored by the common observation that primary teachers tend to adopt speech patterns resembling those used by the pupils they teach.

In a study more specifically related to the instructional situation, Carroll (1958b) reported a differential response pattern in students as a function of changing the form of the verb from active to passive voice. His experiment in oral verbal manipulation was carefully controlled, and indicates that when teachers know important dimensions of their task-structuring sentences and anticipate, even plan for, probable student response patterns, they might gain greater control over the classroom situation affecting pupils as learners.

The Linguistic Structure of Teachers' Language and Current Research on Teaching

The language of the classroom has been the object of intensive attention in current studies of the teaching act. All of these studies have focused intently upon classroom language usage in order to construct a system of communication that teachers can learn and carry into practice (Aschner, 1961; Medley and Mitzel, 1963). Yet, the determinants of verbal behavior that would make this intention feasible cannot even be formulated without understanding the linguistic system which underlies such behavior (Postal, 1964). Many of the recently delineated dimensions of teacher behavior (e.g., logical operations used, habitual expressions) are probably dependent upon the language structure employed by the teacher.

Representative of these efforts are Smith's (1960) analysis of the logic of classroom discourse, Flander's (1960) consideration of pupil-teacher interactions, Gallagher and Aschner's (1963) study of intellectual processes involved in teacher-pupil verbal interactions, Ryans' (1960) analysis of teacher information processing, Bellack and Davitz's (1963) study of meanings communicated in the classroom, Herbert's (1964)analysis of lessons, and Spauldings's (1965) analysis of teacher-pupil transactions.

These studies have all flirted with purely linguistic elements of classroom discourse, their originators having developed techniques yielding criterion measures that, to a great extent, depend upon the verbal behavior of the teachers.[2] For example, Medley and Mitzel (1958) in their Observation Schedule and Record (OScAR) have one category that classifies teacher language into learner-supportive, learner non-supportive, learner directive, etc. These categories are dependent upon linguistic structures which are, at least structurally, not presently known to be mutually exclusive to any of the OScAR categories. Information on teachers' linguistic structure could either empirically validate the OScAR categories or suggest how some teachers because of a variety of linguistic factors might "load off" in one category or another, e.g., use one kind of structure for a given OScAR category.

In Ryans' theory (1960) of teaching as information processing, the communication process is composed of two parts: the actual things and objects talked about, and the syntactic signals that are used to talk about them. For example, when a teacher says, "you cannot read until you have finished your drawing, can you?" she is carrying through on some initial observations of the classroom situation and rectifying or changing them as she desires. However, she could equally well have said "Put the book away," "Finish your drawing first," "we don't proceed that way in here," or a variety of other sentences. They would all more or less induce the child to stop reading and start drawing. However, they do not necessarily contain the same communcation and they certainly have different structures. Consequently, a way to look at the structure of the language used would seem useful in determining the communication sent from the teacher to the learner.

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[2] For more extensive discussion of the possible relationships see Speculations on Linguistic Structure and the Act of Teaching in Chapter IV, p.

The relationship between theories of teaching, ways of studying teaching behavior, and the linguistic nature of verbal behavior seems a fruitful area of investigation, if a productive method of dimensionalizing teachers' language can be found. The relationship of language to both "teaching theory" and "learning theory" and the current research on language would seem to suggest the need for a behavioral bridge between the two that has not been successfully built except in terms of models borrowed from psychological and philosophical disciplines and superimposed upon the teaching-learning situation.

Within this broad framework, the present study was designed to permit the examination of the linguistic structure of teachers' classroom language using procedures that have been applied in recent studies of children's language. This study represents, consequently, the most basic kind of analysis necessary to begin construction of a framework of knowledge in another area upon which instructional procedures might be based.

Summary

This chapter outlined the problem, stated the objectives of the study, and reviewed related areas of research on psycholinguistics and the study of children's language. It called attention to the need for research on the nature of teachers' language, and attempted to suggest some possible relationships to current theories and methods of studying teaching. A brief overview of the study was provided.

The procedures used in the study are described in Chapter II, the findings and conclusions in Chapter III. Limitations of the study and speculations on the findings in relation to studies on teaching and to teaching the language arts are presented in Chapter IV.

CHAPTER II

PROCEDURES

General Procedures

Ten second-grade teachers and eleven fifth-grade teachers in a large, suburban, public school district were enrolled as subjects in the study. A suburban system was selected to obtain gross control over socio-economic status of families of the children in the classes of the teachers involved, other "community" effects, and varying "school" effects. Second- and fifth-grade levels were chosen to maximize apparent differences in teachers' language possibly attributable to grade level and to avoid confounding the study with the multitude of factors that affect the operation of the teachers working with children in school for the first time (as in first-grade), or those working with children for the last time in elementary school (as in sixth-grade), or those working with children in a more "subject-centered" program (as in high school).

The teachers' oral language was tape-recorded for five 40-minute sessions of regular classroom activity. The first session served to familiarize teachers and their pupils with the procedures and to reduce heightened novelty effects due to the introduction of the recording equipment (Aschner, 1963; Spaulding, 1965). The tapes of the remaining four sessions were transcribed and the tapescripts served as the basic data source for analysis in the study.

Subjects

The ten second-grade teachers and eleven fifth-grade teachers who participated in the study taught in a total of nine schools of a public school system in a suburb (1960 census population, 47,922) of a middle-sized industrial city (population, 290,351) in northeastern Ohio. The twenty-one teachers (all Caucasian) constituted 34.43 percent of all second- and fifth-grade teachers in the school system as of February, 1965. They constituted 84 percent of the second- and fifth-grade teachers who met the selection criteria of this study.

Teacher selection criteria were chosen to lessen the influence of certain relevant but possibly confounding variables on the outcomes of the study. Some of these variables were believed to be: sex, degree of education, regional dialect, teaching experience, and extraneous influence in the classroom. Consequently, the following set of criteria was employed to remove, at least partially, these variables from the study. The participating teachers were to:

1. be women,
2. have a minimum of a bachelor's degree,
3. have received their higher education in Ohio and/or states bordering on Ohio,
4. have completed at least one year of teaching,
5. have a classroom free of student teachers, experimental programs, or other unusual situations.

Twenty-five teachers met the criteria. Of these, twenty-two volunteered to participate in the study.[3] One was eliminated when it was discovered, belatedly, that she was teaching a combination second- and third-grade class. The teachers in the study represent only themselves in aggregate as second-grade and fifth-grade teachers. No attempt was made to sample or otherwise make this group of subjects representative of more than themselves for the purposes of generalizing the results.

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[3] Reasons given by the three teachers who refused were personal. They were judged not to consitute a serious limitation to the study. No evidence is available to indicate that these teachers' non-participation affected the decision and/or behavior of other teachers.

The number of teachers used in the study was arbitrarily limited because of the selection of only one system within which to work. This seemed appropriate for a study which, it was hoped, was the initial and exploratory project in a series of contemplated inquiries into various facets of the teaching act. The number did seem large enough for confidence in the results obtained. Previous exploratory research on the nature of teaching generally has utilized a similar number of teacher subjects (e.g., Bellack and Davitz, 1963; Smith *et al*., 1960; Spaulding, 1965).

Because of time commitments, the teachers were put into two groups for analysis of data. The procedure for division of the total into two parts for analysis was arbitrary. An attempt was made in Group I to provide equivalency of age, and experience. Group II comprised all teacher remaining after this division. The data for Group I was analyzed in 1965; for Group II, in 1966. The mean age for the teachers was 41.2. Their mean experience was 10.3 years. Eighteen completed bachelor's degrees in Ohio, three in Pennsylvania. They had completed an average of 11.8 semester hours beyond the bachelor's degree. Four had completed master's degrees. All but one were married. By grade level, the one possibly important difference was in mean experience, a difference of 5.4 years. It should be noted that this difference occurred in Group II. Table 1 presents age, experience, and graduate hours completed for all teachers.

Collection of Data

General Arrangements

Samples of classroom oral language of teachers were obtained in the latter part of the school year--January, February, and March, 1965. In late December, 1964, and early January, 1965, the investigator arranged with the participating teachers to obtain five 40-minute tapes that would, in so far as possible, be representative of the teachers' oral language in normal classroom operations throughout the day. The schedule was flexible and was altered to avoid recesses, assemblies, classes of special subject teachers, or unforeseen circumstances such as suddenly scheduled trips or substitute teachers.

During a taping session, a teacher's entire verbal output was recorded. In addition to instructional discourse, this output included sudden trips to the school clinic with a child, short interruptions by outsiders, children's restroom breaks, and other non-instructional periods. In no case, however, was the teacher's output included in the analysis if students were not present while she was talking.

No more than one tape per teacher was collected on any one day. Three second-grade teachers and six fifth-grade teachers' tapes were collected on successive days. In all other cases at least three of the tapes per teacher were collected on successive school days, and the fourth and the fifth on non-successive days ranging from three

TABLE 1

AGE, EXPERIENCE, AND GRADUATE SEMESTER HOURS OF PARTICIPATING TEACHERS

	Second Grade				Fifth Grade			
	Teacher	Age (yrs.)	Exp. (yrs.)	Grad. Sem. Hrs.	Teacher	Age (yrs.)	Exp. (yrs.)	Grad. Sem. Hrs.
Group I	A	26	3	15	L	31	7	0
	B	29	5	6	M	28	5	16
	C	32	7	0	N	52	6	30 (M. Ed.)
	D	55	19	10	O	55	19	20
	E	51	5	0	P	25	2	0
Group II	F	48	25	0	Q	48	2	0
	G	39	16	30 (M.Ed.)	R	63	26	30
	H	27	4	0	S	48	2	10
	I	41	11	20	T	28	4	0
	J	60	36	30 (M.Ed.)	U	24	1	0
					V	56	11	30 (M.Ed.)

	Group I	Group I
Mean Age	38.6	38.2
Mean Experience	7.8	7.8
Mean Grad Hours	6.2	13.2
	Group II	Group II
Mean Age	43.0	44.5
Mean Experience	18.4	7.7
Mean Grad Hours	16.0	11.7

	Total Second Grade	Total Fifth Grade	Total Both Grades
Mean Age	40.8	41.6	41.2
Mean Experience	13.1	7.7	10.3
Mean Grad Hours	11.1	12.4	11.8

to fourteen elapsed school days from the previous taping.[4]

Data Collection Equipment

The data collection equipment used was adapted from the system originally developed for studies of teaching conducted by A. W. Foshay and his associates at Columbia University (Herbert and Swayze, 1964; Herbert, 1964). Basically, the system was composed of an omindirectional lavalier microphone attached to a compact (3" x 1-1/3" x 2-3/4") FM wireless transmitter. This microphone and transmitter were worn by the teacher. The voice signal was transmitted to an FM tuner which was, in turn, fed into a stereophonic tape recorder. The tuner and tape recorder were located outside the classroom, either in the hall or another room. The absence of equipment in the classroom was intended to minimize observer effects upon classroom operations. A complete technical description of the equipment used in this study constitutes Appendix A (pp. 103 to 108).

Description of Taped Sessions

The initial plan called for four tapes of 40-minute duration to be transcribed for intensive analysis. (Appendix B presents an example of a transcript, pp. 109 to 128). Five were collected; the first was used as a "breaking-in" or familiarization period. The times encompassed by the ~~forty~~ eighty-four tapes that were actually used in the study ranged from periods of 33 to 45 minutes in length. The original tape times were adjusted to exclude periods of transmission interference, but do include all teacher talk both in and out of the presence of students. For Group I the mean adjusted taping time for second-grade teachers was 39.6 minutes, and the mean adjusted taping time for fifth-grade teachers was 39.5 minutes. For Group II, second grade, 41.2; for fifth grade 41.3. See Appendix C (pp. 129-131). The tape times vary because of occasional interruptions in transmission and the sometimes non-synchronized school clocks and bells. The individual tape times were accurately determined in subsequent runs of the eighty-four tapes using a highly reliable stop clock. Because of the 1.7 minute mean difference between Group I and Group II, comparisons between groups in terms of absolute amounts need to be considered carefully.

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[4] These separations were, in part, occasioned by the loss, through theft, of recording equipment that could not be replaced through local sources. Replacement time delayed the project one full week in data collection and forced rearrangement of the entire taping schedule.

The tapes obtained were representative of times during the school day and of days of the week. Twenty-four second-grade teachers' tapes and twenty fifth-grade teachers' tapes were collected in the morning. Sixteen second-grade and twenty-four fifth-grade teachers' tapes were collected in the afternoon. For second-grade teachers, the number of sessions taped Monday through Friday respectively were 7, 12, 5, 9, 7. For fifth-grade teachers, the corresponding numbers were 7, 8, 9, 11, 9.

The subject matter of the taped sessions was estimated to be consistent with the amount of time usually spent on the several instructional areas by teachers at the two grade levels. See Table 4, page 61.. The figures do not necessarily reflect the total focus of student activity in the classroom. Particularly in second grade, teachers work regularly with small groups of children engaged in various learning activities. The time devoted to reading in the second grade, too, includes what reasonably might be called social studies, science, and English.

Criterion Measures

The criterion measures selected for the description of the linguistic structure of teachers' classroom oral language were modifications of a linguistic scheme developed for the syntactic analysis of children's language (Loban, 1963; Strickland, 1962).[5] This scheme is, in turn, a modification of descriptive categories derived from the study of adult language (Francis, 1958). These categories have achieved, through much use in research, respected status for the purposes employed. However, they in no way represent the complexity and subtlety of the linguistic structures employed by both adults and children as they speak the English language. There is still much disagreement among linguists and psychologists as to the categories appropriate to the description of the English language (i.e., Laird, 1961, 1965; Miller, 1965; Francis, 1958; Sledd, 1959). Consequently, the categories employed in this study should not be seen as either the "correct" or even the "best" way that teachers' language might be described linguistically. To be sure, the categories are incomplete. They were used here because of their demonstrated ability in differentiation of linguistic structures and description of other features of spoken language. There was, of course, the added inducement of their facilitation of subsequent studies of teacher-pupil verbal interaction.

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[5] The Loban and Strickland schemes were originally developed at a conference sponsored by the U. S. Department of Health, Education, and Welfare and held at Bloomington, Indiana, in October of 1959. The linguistic consultants at this conference were John Carroll, W. Nelson Francis, Fred Householder, David Reed, and Harold Whitehall (Strickland, 1962).

The measures used in this study include the following:

1. Phonological units, communication units, mazes (non-communication units), number of words used, number of words in communication units, and number of words in mazes.
2. Patterns of structure within the communication units.
3. Component parts of the structural patterns.
4. Weighted subordination index.
5. Vocabulary diversification index (type/token ratio).

In studies of children's language (Loban, 1963; Strickland, 1962; Hunt, 1964) the total number of words, number of communication units, number of words in communication units, number of mazes, number of words in mazes, and vocabulary diversification have been operationally called descriptors of language fluency. The variety of patterns, manipulation of pattern components, and use of subordination have been considered estimates of language effectiveness. The description of language obtained in this study is assumed to result from interaction of the teachers with the children in an instructional situation and does not necessarily indicate the teachers' fluency or effectiveness in using the English language in other situations.

Segmentation of Teacher Talk

Phonological Unit--In order to segment the teachers' transcript speech into units usable for detailed analysis of the syntactic structure, a linguistic device called the phonological unit was used (Loban, 1963, p. 6). This unit is based on the pauses of varying length that are used to terminate utterances (Francis, 1958, p. 157; Hill, 1958, pp. 22-23).[6] These pauses, called terminal junctures, and their symbols in ( ), are: sustained terminal juncture (/); rising terminal juncture (//); and falling terminal juncture (#). Phonological units are illustrated in the following example:[7]

> But it is wet / isn't it // This is what makes it do it # This is charcoal you've used for this / isn't it # I haven't seen that done before # Well / that's quite interesting # Shall we put it over on the shelf / so others can see it //

The pauses of the teacher's speech show four falling (double-cross) terminal junctures indicating a clear-cut termination to utterances. This juncture is characterized by a diminishing of force and a drop in pitch of the voice. It can be heard at the end of most American utterances, including single words in isolation. The rising terminal juncture is characterized by a rise in pitch just before the pause, with somewhat less abrupt cessation of voice. This juncture corresponds on a high level to a question mark and on a low level, to a comma. The teacher in this example uses two, both to terminate utterances. The single-bar juncture represents pauses of less finality. There are four in the example.

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[6] Loban's (1963) use of linguistic measures did not always appear to correspond to linguistic descriptions given in linguistic texts. For instance, Loban (1963, p. 6) uses the falling terminal juncture (#) for both falling and rising pitch. (The reliability of coding, pp. 46, in the present study offers a good explanation of why he did this.) This is contrary to both Francis (1958) and Hill (1958). The investigator in this study chose to follow the linguists first and Loban second in all cases of disagreement. The linguistic references used in this study were by order of the investigator's use of them (based on his prior familiarity): Francis (1958), Whitehall (1956), Sledd (1959), Fries (1940), Lloyd and Warfel (1956), and Long (1961).

[7] Examples throughout this report have been extracted from the teacher transcripts.

The phonological unit is an utterance occurring between the silences represented only by rising and falling junctures. These phonological units do not represent necessarily what are traditionally called sentences or independent clauses. The teachers in the normal course of their work used words, phrases, and what are traditionally called subordinate clauses as complete utterances. Six phonological units occur in the above example.

One specific modiciation to ordinary linguistic usage was made to the phonolgical symbols. When a teacher was either interrupted or deliberately did not complete a sentence while seeking a student response, the utterances were marked with a dash (____) followed by a double-cross juncture (e.g., "It's ah located near the west, one of the __#"; "Four tens are ___#").

Communication Unit-- Once the phonological units were determined, they were subdivided further into communication units. Hunt (1964, p. 34) has defined these units as "the shortest grammatically terminable units into which a connected discourse can be segmented without leaving any fragments as residue." Watts (1944, p. 65) has defined them as a group of words which cannot be further divided without loss of their essential meaning. They are called communication units because they can be identified both structurally and semantically.[8] For example, "This is charcoal you've used for this" is a unit of communication. If "you've used for this" were to be omitted, the essential meaning of that communication would be changed. "This is charcoal" does not mean the same thing as "This is charcoal you've used for this." On the other hand, such phrases as "all right," "um hum," and "oh" would also be admitted as communication units when spoken independently, and when used as responses to other statements or questions, but not when they introduce longer predication (e.g., "All right, you can go now.")

Communication units, consequently, have two complementary ways of being identified--semantically and syntactically. Thus, subordinate clauses which answer questions or stand alone can be communication units, but when they occur with independent predications they will only be part of a communication unit. The communication unit is, practically, the grammatically indepedent predication or clause with any of its modifiers. No communication unit included more than one such clause or predication. Independent clauses that are joined by coordinating words are marked as separate communication units.

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[8] In this investigation, it was hoped that terms could be used that would allow easy comparison to other studies completed and underway. The practice was to follow Loban (1963) and Strickland (1962) whenever possible. Unfortunately, different researchers will often prefer different terms. For those who have followed Hunt's research (1964), "communication unit" here is roughly equivalent to "minimal terminal unit." What this investigator will later refer to as "mazes," Hunt calls "garbles."

The following examples illustrate the method of identifying these communication units. A cross (+) marks the completion of each communication unit. As noted above, the // or # marks the completion of a phonological unit.[9]

Example 1: But it is wet / isn't it //+ This is what
makes it do it//+ This is charcoal you've
used for this / isn't it //+ I haven't
seen that done before //+
Total communication units: 4

Example 2: Your homework is pulling your test grade
down /+ and you can see me next Friday /+
and I'll tell you for sure / whether
you'd better start preparing 'em #+
Total communication units: 3

One exception was made to the regular procedure for determining communication units. Infrequently, teachers, without any change in pitch or with only a slight pause, would interject a parenthetical remark unrelated to the meaning of their current communication units. These remarks were tallied as one communication unit each and the utterances within which they fell were also tallied as one unit only rather than the two they would become if the parts were considered partials (e.g., "How am I / Sit down, honey, / supposed to follow this mess?"--two communication units.)

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[9] In the actual transcripts, an elaborate color coding system was used for the various elements with which this study was concerned. For instance, the color green was used for phonological unit lines. For the communication units a red vertical bar was used instead of the cross (+) used in these examples. (See Appendix C.)

Language Maze-- Before analyzing the communication units, it was necessary to remove series of words or initial parts of words which did not make meaningful communication or structural units of communication as defined in this investigation. These removed units were called mazes. They are common in all speech when the speaker is still thinking and still formulating his response as he speaks. They may also result from fatigue, lack of motivation, or simple inability to express an idea. They were eliminated because, representing tangles of language, false starts, etc. they are non-meaningful, often structurally unrelated, and thereby unanalyzable.

The eliminated mazes, of varying length, were not counted as communication units. The procedure was simply to bracket them, count the number of words in them, and then to circle this number, which was used later to determine words in mazes. The following examples selected from several teachers will illustrate what the maze is:

1. You [ca] can come back and get your reading book #+ (1)
2. You ask about the product [of of these] of this area #+ (3)
3. [We've made] We've followed [this] certain dots to make a picture #+ (2) (1)
4. [How how many did you] / Pretend that you are, Jim #+ (5)
5. [And what did ah] Was Jerry good at catching dogs //+ (4)
6. [I only get thir] Oh you do / . . . #+ (4)

When the mazes were removed from the communication units, the remaining words always constituted an acceptable communication unit.

Within mazes, partial words or other unintelligible sounds were counted as words. In cases where there were subordinate clauses that were separate phonological units, the subordinating word was not removed as these were not considered as unintelligible. Also, so-called grammatically "poor" sentences were not "corrected" by the deletion as mazes of superfluous words such as "of" in the expression "off of." In so far as the investigator was able, no word was deleted--as part of a maze--if its use could possibly be known, inferred, or guessed.

Summary of Segmentation Procedures--The phonological unit, the communication unit, and the maze were identified in all the transcripts of the participating teachers and became the basis for the analysis of sentence patterns, components of sentence patterns, and the subordination index. The following rules (Loban, 1963, p. 10) summarize the method of segmentation used in this research. They have been modified only to the extent of replacing child-subjects with teacher-subjects.

> 1. Every utterance must contain at least one communication. Hence, an utterance which is not an independent clause but which is preceded and followed by (terminal) silence on the part of the teacher is arbitrarily defined as a communication unit.
>
> 2. The material in a stretch between terminal silence and terminal silence contains at least as many communication units as it contains independent clauses. Every independent clause is a communication unit; no communication unit contains more than one independent clause.
>
> 3. In a stretch between terminal silences, material ~~with~~ which precedes, separates, or follows independent clauses constitutes either mazes or further communication units. Elliptical utterances, that could be expanded into

independent clauses are communication units although they are not complete sentence patterns.

4. Words like "all right" or "yes" are separate communication units when they could be replaced by independent clauses, but not when they merely introduce clauses.

Word Counts--The word counting procedures for total words, for words in communication units, and for words in mazes were as follows:

1. Each contraction was counted as one word (e.g., can't).[10]
2. Each number was counted as one word (e.g., 18 was considered one word; so also was 1,800).
3. No partial word was counted as a word, except when the partial word occurred in a maze.
4. Expressions such as "uh huh," "sssh," "tsk, tsk, tsk," were counted as one word each. Utterances such as "ah," at a break in thought, were not counted.
5. All words ordinarily hyphenated when written were counted as one word.
6. Proper names, even if two words, were counted as one word (e.g., "Jimmy Jones" is one word).
7. Mr., Mrs., Miss and other modes of address were counted as separate words.

Patterns of Structure Within Communication Units

Communication units are either phonological units or parts of phonological units. They, in many instances, approximate what have traditionally been called sentences. However, as sentence patterns, they are determined by the tone patterns used in saying them as well as by the word groups. (See Whitehall, 1956, pp. 29-40.) Syntax, semantics, and phonology are all used to determine the communication unit. Conceptually and practically, one is able to determine patterns into which these units fall and to obtain both the frequency and variety of patterns used. For convenience, these structural patterns of the communication units will be called sentences.

---

[10] This rule is a matter of preference which the investigator chose to follow, although there is disagreement about doing so. (see Chotlos, 1944, and Irwin, 1960, for different points of view.) The investigator's decision rested upon the assumption that contractions are heard as one word.

The primary basis for classifying English sentences is word order (i.e., subject--verb--object). For convenience and for uniformity, Loban's (1963) classifications were used in the present research, although these do not take into account all structures within structures and do not provide a structurally adequate picture of the English language. For instance, several varieties of word order define what is commonly called a question, although all types of questions are subsumed under one heading in this analytic system.[11] Thus, the system used here is not sensitive to all word order subtlety. Nevertheless, the system was deemed adequate for the purposes of this study.

On the basis of this analytic system, Loban (1963) was able to classify all sentences from his children-subjects into ten categories. In the present research, some twenty-four classifications were identified. However, for only twelve were the frequencies sufficient to warrant their use.[12] The other twelve were simply tallied as others. (Examples of the structures tallied as others are given on pp. 37.).

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[11] Another area of weakness lies in the overlapping of some categories. "She showed me the word," "Show me the word," and "Will you show me the word?" all have "me" expressed as an indirect object and "word" as the direct object. Yet, each represents a different sentence pattern, only one of which in this type of analysis will indicate these uses. The first one will show the usage, but the second is subsumed under the "command" pattern and the third under the "question" pattern.

In the analysis of structural patterns, eight symbols were employed. These symbols and definitions (including appropriate illustrations) are listed below.

1 = subject

> 1 includes both the head (central word) and its modifiers (articles, appositives, restrictive and nonrestrictive phrases and clauses). (1) refers to the expletive as subject.

Examples:

$\overset{1}{\text{Seventy minus forty}}$ equals thirty.

$\overset{1}{\text{The people who were off their seats}}$ should stay in their seats.

$\overset{(1)}{\text{There's}}$ still $\overset{1}{\text{another one}}$.

2 and (2) = verbs used as predicates

> 2 includes the head (the main verb) plus auxiliary verbs and modifiers. 2 represents transitive and intransitive verbs. (2) represents linking verbs.

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[12] Prescriptive grammar would require that some of these structures should have been interpreted to fit existing categories. The practice in this study was to consider compound verbs, compound subjects and other compound forms as one unit and then to classify the sentence into one of Loban's ten categories. However, some sentences, such as those containing a compound verb, one with complement and one without complement, would have been unclassifiable (i.e., "to go and get the books").

2
Examples: Mrs. "X," Mrs. "Y," and I are going to wear this.

2 2
I will go and get the books.

2
You should have waited.

(2)
That is very good, honey.

(2)
It looks okay.

3 = the inner complement (indirect object)

3
Examples: You told me some news.

3
That last picture we saw yesterday told us that someone had.

4 = the transitive verb complement (direct object)

4
Examples: Everyone say it.

4
She wants to get started on her cleaning.

5 = the linking verb complement (adjectival, nominal, or other element used as subjective complement)

5
Examples: That might be nice.

5
He was a brave general.

6 = the outer (objective) complement

6
Examples: I'll count that correct.

6
In our workbook, they call these, shapes, don't they.

M = the movable parts of a sentence (words, phrases, or clauses) with no fixed position. However, the degree of "movability" varies. Some elements are more movable than others.

Examples: $\overset{\text{M}}{\underline{\text{If you don't}}}$, raise your hand.

He was $\overset{\text{M}}{\underline{\text{usually}}}$ on time.

Z = a maze

Examples: $\overset{\text{Z}}{\text{(Read out)}}$ Read $\overset{\text{Z}}{\text{(loud)}}$ it out loudly.

These symbols were then applied to the communication units to determine the patterns used.[13] Each communication unit having been syntactically and phonologically identified could thus be classified into one of the twelve patterns and one incomplete unit:

Pattern	Symbol	Examples
one	1 2 or 1 (2)	We will go through the book. He is in the office.
two	1 2 4	You'll understand it. You have three left.
three	1 (2) 5	Laurie's rash is none of your business. That is all you have to do.
four	1 2 3 4	My mother gave me permission to go. Maybe the picture will give you a clue.
five	1 2 4 6	We'll just call this little old lady, Aunt Betsy. You can call it "A New Sled."
six	(1) (2) 1	There are some new vocabulary words on the board. Here is my little fat man.

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[13] Other symbols and coding procedures are explained in Appendix C, pp. 129-131.)

Pattern	Symbol	Examples
seven	questions	How many got sixteen? Will you please tell me how many paragraphs there are on this page?
eight	passive forms	You might have been electrocuted. The cows are being loaded on the airplane.
nine	requests, commands	Come on. Let's make a circle here.
ten	partials	Not the book. Okay. Um hum. The ones or the tens?
eleven	4 1 2	That we must blow. Heavier things like spelling books, we will skip.
twelve	1 2 (2 4)	We should go back and review our words. It doesn't come right out and say that.
thirteen	others (These are either idiomatic expressions or constructions that seem to be the result of thought changes, but that nevertheless, do make sense.)	Down here are the answers. Wasn't that nice of Uncle Andy to let Dan ride the mule. (Not a question) Right you are.

One specific modification of Loban's sentence pattern classification system was made. Those communication units that were deliberate incompletes or incomplete because of some interruption were coded as partials only if a basic sentence part was omitted. They were otherwise classifed into their sentence categories (e.g., "And we'll do __ #" would be a partial, while

'We'll do our final test in ___ #" would be a 1-2-4).

Pattern Components

Within the sentence (structural) patterns of the communication units, there are a variety of components that may be used for a deeper analysis of the ways in which teachers use their language. These components would include, among others, a more detailed study of the subjects, the verbs, the complements, the movables, and the mazes. For example, the subjects could be studied by examining the nominals used--single words, infinitives, other verbal phrases, and clauses. These kinds of measures were identified by Loban (1963) in his study of children's language as a more refined differentiation technique than the structural patterns themselves. Because of the lack of knowledge concerning both the teachers' use of the patterns and the internal components, both measures were included in the present study. Among the many things that could have been selected, subjects, complements, and movables were chosen as measure of the teachers' dexterity in varying components within the structural patterns.

Subjects--The subjects were analyzed in terms of the nominals that were used as subjects.[14] The nominals used were nouns, pronouns, verbals, infinitives, prepositional phrases, and clauses. To avoid confusion and to limit the number of subjective judgments that would have to be made, adjectives used as nominals were counted as nouns. When possessives were used in this a lot (e.g., David's is here. His is over there) the part of speech of the possessive was counted as the nominal (i.e., noun and pronoun, respectively). Compound nominals were counted as one if they belonged to the same category (e.g., "ball and glove"), separately if they did not (e.g., Bill and he). Subjects within subordinate clauses were not included in this count.

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[14] The term nominal has the meaning here of any word or larger form which occupies a position typically occupied by a noun. (See Sledd, 1959, pp. 228-29).

Early inspection indicated that the kinds of words used as nominals in the subjects were stable for all teachers. Therefore, only the last transcript from each teacher was used in this analysis. For all other measures, all transcripts were used.

Complements--For complements, the procedure was the same as for subjects, although further refinements were necessary in coding. The complements tallied were the inner complement, transitive verb complement, outer complement, and predicate nominative. Predicate adjectives were not included since they are considered as modifiers in the 1-(2)-5 structure rather than nominals. Infinitives were tallied as such, not as infinitive phrases.[15] Complements within subordinate clauses were not included in the analysis.

Movables--The third internal component examined was the movable. Movables represent those components of the communication unit which are relatively unfixed in position. Most movables are adverbs, although all adverbs, by definition, are not movables.

---

[15] Some linguists distinguish the infinitive phrase from the infinitive clause. In "He decided to go" and "He decided where to go," the "to go" would be called an infinitive phrase used as a direct object and "where to go" an infinitive clause used as a direct object. Both of these components were counted as simply infinitives in this study. (See Francis, 1958, p. 398; and Sledd, 1959, pp. 219-20.)

Such modifiers as "usually," "by the way," and "if you are afraid" can move about in the sentence without affecting, ordinarily, the meaning of the sentence. On the other hand, such modifiers as "never," and "isn't it" (e.g., That's nice, isn't it?) are relatively fixed in position. The practice in this research was simply to "test" an element's movability within the sentence pattern to which it was attached. For example, in the sentence "This morning, I want you to read the book," the adverbial modifier "this morning" was moved to the end of the sentence without doing serious damage to the meaning of the sentence (i.e., "I want you to read the book this morning"). Thus it was counted as a movable.[16]

Movables, for the purposes of this research, were of four types: words (e.g., "ordinarily"), phrases (e.g., "if at all possible"; "right now"), clauses (e.g., "if you get a chance"; "when you can"), and multiple movables (combinations of these three types--hereafter referred to as "combinations"--(e.g., "holding the book in his hands"; "on some of these things from the first half of the year"). Movables within fixed positions (e.g., a movable within a clause used as a transitive verb complement) were not counted since such fine distinctions lay beyond the limited scope of this exploratory research.

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[16] Some might argue that the stress was changed in moving this component around. To be sure, such changes were introduced in testing some movables. However, they were judged still movable in the sense that the speaker had a choice in positioning them that she did not have with the fixed order components of the rest of the sentence. The English language is definitely controlled by a fixed word order. "You may finish you painting" is definitely not the same communication as "May finish you your painting" or "Your painting may finish you." Laird (1964) and Franics (1958) discuss this thoroughly. Additional examples may be found in Strickland's report (1962b).

Subordination

The use of subordinating structures in communicating has, by logical analysis and by previous study (e.g., LaBrant, 1933; Osgood, 1960; Hunt, 1964), been designated as a more mature and difficult form of language expression than simple parallel statements connected by "and" and "but."[17] Subordination through phrases and clauses extends the speaker's flexibility and coherency in speaking. However, a measure of subordination level does not represent a perfect index to structural complexity (see Loban, 1963, p. 18).

In this study, a weighted index of subordination was adapted from Loban (1963) to determine the use of this one aspect of grammatical complexity. This weighted index has certain advantages over the type/token ratio used by LaBrant (1933) in her comparison of dependent clauses (types) to independent predicates (tokens), albeit the sophistication of that procedure in the early 1930's. The present study's date source (transcripts of the teachers' speech) was so full of partials that a procedure like LaBrant's would not have even considered all the communication units in which the teacher did not use predicates. Nor would it take into account the complex nature of clauses within clauses within clauses. Examples of such complex structure were, in fact,, observed and analyzed in this study.

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[17] Coordinated clauses are, however, not always nearly as simple as most grammar books contend. Whitehall (1956, pp. 72-73) has listed over forty-seven different funtion words which can coordinate clauses.

The weighted index of subordination was developed to account for all subordinate clauses and to allow a grading of clauses within clauses. Loban's method (1963, p. 61) originally tallied the subordinate (dependent) clauses as follows:

1 point for each dependent clause (first-order dependent clause)

2 points for any dependent clause modifying or within another dependent clause (second-order dependent clause)

2 points for any dependent clause containing a verbal construction such as an infinitive, gerund, or participle

3 points for any dependent clause within or modifying another dependent clause, which, in turn, is within or modifies another dependent clause (third-order dependent clause)

Upon attempting to use this system of tallying, the investigator found that coders had too much latitude in interpreting each category. Consequently, using this method in coding the subordinate clauses produced unreliable scores. Another coding system was devised by the investigator to cover the kinds of complexities that occur in teacher's language. This system is shown in Table 2.

TABLE 2

CODING PROCEDURES FOR WEIGHTED INDEX OF SUBORDINATION

	All DC[a]	Second-Order DC	Third-Order DC
Without verbal[b]	1 point	+1	+2
With verbal	+1	+1	+1

[a] DC = dependent clause

[b] Verbal is limited to any element with verb properties (e.g., - ing, -ed, to do) used as a nominal or an adjectival.

The following examples will illustrate the actual coding procedures using this system.

> Example 1: Well, see if the Great Plains look the same as you think they should look.

In this example, there are three dependent clauses. "If the Great Plains look the same as you think they should look" is the first dependent clause. It receives 1 point. "As you think they should look" is the second dependent clause. It receives 1 point as a dependent clause and 1 more point as a modifier of the first dependent clause. "They should look" is the third dependent clause. It receives 1 point as a dependent clause and 2 more points as a "third-order" dependent clause. Total points: 6.

> Example 2: I think that we should all read as loudly as we can because with this machine going, you can't hear very well.

In this example, there are three dependent clauses again. "That we should all read as loudly as we can because with this machine going we can't hear very well," is the first. It receives 1 point. "As loudly as we can" is the second. It receives 1 point for being a dependent clause and 1 more for modifying the first dependent clause. "Because with this machine going, you can't hear very well" is the third. This would receive 1 point as a dependent clause, 2 points as modifying a second-order clause and 1 point for the verbal "with this machine going." Total points: 7.

> Example 3: But we felt sorry for these people because we remembered what we had gone through and how much we wanted our independence.

In this example, there are three dependent clauses. "Because we remembered what we had gone through and how much we wanted our independence" receives 1 point as a dependent clause. "What we had gone through" receives 1 point as a dependent clause plus 1 point as a second-order dependent clause. "And how much we wanted our independence" receives 1 point as a dependent clause plus 1 point as a second-order dependent clause. Total points: 5.

Vocabulary Diversification

The fifth measure of analysis was a vocabulary diversity index adapted from Loban (1963) as an indicator of style diversification. This index is the ratio of the number of different words (types) to the total number of words (tokens) in a sample of language. The type/token ratio can disclose important distinctions between speakers' styles when the size of the language sample is kept uniform (Loban, 1963, p. 22). Prior research using this measure has revealed that a person who uses a large vocabulary has a more diversified style than one who uses a small vocabulary (Chotlos, 1944; Johnson, 1944).

Loban (1963) initially used the vocabulary diversity index as a measure of new vocabulary introduced in consecutive 100 word segments (maximum 800 words). Considerable modification of his procedure was made for the vocabulary diversity measure used in the present study. The differences in procedures are based upon the differences in amount of language involved and the differences in the procedures for obtaining the language samples. Loban presented a common stimulus to children in his study and collected short samples. The present study collected a long sample in the normal situation or under absolutely normal stimulus conditions.

In the present study, word samples were selected that represented the total number of words used. The investigator assumed that the vocabulary diversity index would discriminate against speakers who use more language because the more one speaks, the more likely he is to repeat words. To control for this discrimination, a 500 word sample was taken from each transcript. From the average transcript 500 words approximated a 16 percent sample of the total words spoken during a taping period. To make the sample representative of the teacher's total teaching time, the total number of pages in each transcript was divided by five to obtain five even divisions in the transcript. Then, using a table of random numbers, a page from each division was selected. From each of these selected pages one hundred words were counted. When there were not one hundred words on a page, the counting was carried to the next page unless the selected page happened to be the last page in the division, in which case the counting was continued on the first page of that division. The procedures for counting words for the vocabulary diversity index were the same as those for counting total words in transcripts, words in communication units, and words in mazes as given on pages 31-32.

The one-hundred-word groups from each selected page were consolidated and constituted a 500 word sample from each transcript. These words were then sorted into total number of different words, providing an indexing ratio of number of different words pet 2000 word segment for each teacher. In this differentiation, no distinction was made among parts of speech (e.g., "number" was tabulated as one different word whether used as a noun, verb, or adjective).

Reliability

There is no current data available on the reliability of any of the measures used in the present study, although they have achieved wide popularity in quantifying language behavior. For this study, reliability coefficients were determined for all coders and all measures in Group I. The coders for Group II were ~~either~~ trained by the coders used in Group I. Regular checks were made to assure that the second set of coders were consistant with those of Group I. Only one of the measures, the phonological unit, caused any great reliability problem in this study. It was decided that one coder would do all phonological units in Group I to achieve at least consistency. However, one additional coder was trained to do the phonological analysis for purposes of determining the clarity of the coding directions for this part of the study. It was found that the two coders were unable to agree regularly about the absence or presence of slight pauses, and about rising and falling inflections. Thus, the presence or absence of slight pauses was considered as being one category, and rising and falling pauses were combined into a second category. A coefficient of agreement (agreeing marks divided by total marks) was obtained for the first five pages of the fourth transcript of every teacher in Group I. The coefficient of agreement, .89, was considered sufficient for this study. A third coder was trained and carried out the coding for Group II. Her work was checked by the coders of Group I.

Since the phonological units are not themselves analyzed in the study, but only provide a means by which some communication unit differences are made, it was decided that a more meaningful reliability measure would be agreement of two coders on placing communication unit marks according to the way they had each coded the phonological units of the first five pages of the fourth transcript. Acceptable reliability for both communication units and phonological units could then be assumed. Agreement on communication units was .99+.

All other categories in the study seemed to be subject primarily to problems of accuracy, although there was disagreements on coding specific elements. These disagreements were always resolved either arbitrarily or by modifying rules as indicated under each criterion measure defined in this chapter. Therefore, a complicated procedure of cross-coding was developed to insure accurate categorization with each measure. After the communication units had been determined by one coder, a second coder analyzed them for sentence patterns, correcting errors in communication unit coding as he did so. Then the original first coder made the determination of subjects, then of complements, and finally of movables, blocking out each segment or component on the transcript as it was analyzed, thus insuring not only agreement between coders, but a highly accurate coding. The last unit analyzed, movables, was classified once, and then reclassified by another coder to insure accuracy on this measure. This procedure was used for both groups.

A similar determination of the accuracy of coding subordinate clauses was made. Subordinate clauses were classified after communication units were determined. Errors were then caught as subsequent coders went through the transcript. The actual weighting of the subordinate clauses was effected using the modified scale delineated on page 42. Spot checking revealed complete agreement on using this measure.

Since the vocabulary diversity measure was obtained independently of all other measures, accuracy in scoring this measure was checked by coding five transcripts twice. Agreement on the five randomly chosen transcripts for two coders was .99+.

Some Limitations of the Study

The study was limited generally by the number of teachers participating and by the nature of the criterion measures. The effects of these limitations on this study and some recommendations for overcoming some of them in subsequent research are discussed below.

The major restriction inhibiting generalization of the results is the number of subjects (21) who provided the data for this study. The investigator would suggest future studies use more teachers with shorter segments of discourse. An optimal length of sessions might be determined by re-analyzing transcripts to see what differences, if any, are attributable to both length of sessions and number of sessions recorded for each teacher. In the present study the procedures of acquiring the data assure that it does reflect the current linguistic structure of the participating teachers' classroom language. It is, however, entirely possible that replication of this study in another area of this state or of the country would produce different results. It is equally plausible that the results obtained pertain only to the teachers of the two grades involved. However, in light of the similarities and overlap noted for the two grade levels actually involved in the study, a hypothesis could be made that the results of this study can be interpolated to cover third- and fourth-grade teachers similarly selected from the same school system. Extensions of the study to elementary teachers at all grade levels, and indeed, to high school teachers, would provide information over a range of teachers that an exploratory study like this one could not handle.

Unfortunate, too, is the lack of information available from this study on the relationship of the content of the classroom discussions to the linguistic structure employed by the teachers. The exploratory nature of this study provided only fragmentary evidence concerning the content under discussion. No information was gathered concerning the specific content (i.e., grammar, subtraction, geography as opposed to English, arithmetic, social studies) under discussuon. Nor was any attention given to the subject of the reading books or other texts used by the teachers and students in the sessions. Global differences were noted in amount of language, possibiy due to the nature of the content areas. The influence of content on teachers' language, confounded in this study, deserves specific attention.

The criterion measures themselves represent another major limitation to this study. The full complexity of the English language could not possibly be explored in a study of this type. It was necessary to limit the criteria to previously developed, if perhaps weak, predicators of fluency, and language effectiveness and control. The five major criterion measures described in the procedures section were selected because their past application to children's language would provide a basis for comparisons, once the present study had established the feasibility of using them for teachers' language.

The criterion measures are not defined as exclusively as the investigator would have liked. Much of this kind of overlap is probably due to the rather imperfect applicability of the measures as descriptors. Little, if any, attention seems to have been given to the validity of these measures in studies of this type. They are originally the result of linguists' attempts to codify, without bias, the actual spoken dialects of English. Unfortunately, they have become, necessarily, descriptive categories to be applied to the language data in studies of this type. In the transition some of the objectiveness has been lost--no doubt because both linguists and educators have attempted to present the structural systems with terms adapted from an earlier, more prescriptive grammar system.

As a result of the looseness in criteria created by their equivocating nature, this study may be difficult to replicate in its entirety. However, the investigator does feel that procedures given in this chapter are as clearly defined as was necessary to train coders to analyze the transcripts consistently. Yet, since linguistic categories are not always clearly defined, some degree of personal arbitrariness was present in the study. However, in this regard, all decisions requiring subjective judgments were made by the investigator and the chief coders for each group, insuring a minimum of consensus. If some categories' boundaries are warped, they are so for all teachers in the study and to the same degree.

To make this study completely replicable would have meant synthesizing a ponderous amount of linguistic theory and practice more easily and completely obtained from available books on linguistics. One contemplating such replication should be familiar with the linguistics works mentioned in the references, at least.

One measure, the subordination index, has already been challenged by a more involved analytical procedure, derived from generative grammar (Chomsky, 1957). The basic transformational system of generative grammar purports to identify grammatical complexity much more completely than the presently used subordination index. Nevertheless, the subordination index, which requires much less time than the Chomsky scheme, may provide more information than one can handle conveniently. Attention should be given to the relative usefulness of the two measures before subsequent studies are planned.

Another serious limitation to this study, and to other studies concerned with teaching, is the complete lack of knowledge concerning the relationship of the teacher's language inside the classroom to his language outside the classroom. For instance, one does not know how the teachers in this study would instruct an adult friend, or converse with children outside the classroom, or lecture at their service clubs, or question a legislator. Although on the surface this knowledge would seem to have little to do with the actual classroom instructional processes, the investigator asserts that this kind of information is needed before studies are undertaken and/or prescriptions advanced concerning which language elements can, and which cannot, consciously be manipulated by the teacher or be taught in teacher preparation programs.

Summary

This chapter has described the two participating teachers at each grade level, the recording equipment used in collection of data, the procedures used in collecting the data, and the criterion measures used in analyzing the data. Information concerning reliability of coding was included. Limitations of the study were discussed.

CHAPTER III

FINDINGS

General Plan of Analysis

In this chapter, findings are described in three parts: fluency, effectiveness and control, and interrelationships among selected language variables. Fluency includes criterion measures which concern amount, smoothness, proficiency, and readiness with oral language. The findings reported include amount of language uttered by all subjects, subjects' freedom from mazes, and the diversification of their vocabularies. Effectiveness and control of language encompass~~es~~ order and organization. The findings reported include patterns of structure, component manipulation within patterns of structure, and subordination. The section on interrelationships contains statements of relationships obtained from correlations of all measures across all teachers, and across teachers at the two grade levels.

Since the study was exploratory, the investigator desired only to examine and describe the verbal behavior. The data summarized in this chapter were all collected during the same period. However, the data were analyzed in two parts. Ten of the teachers identified here as Group I were included in an earlier report completed in 1965.[8] Eleven teachers identified here as Group II were analyzed in 1966. The findings reported in this chapter are thus based on the two groups. Because they were analyzed at different times and because of the exploratory nature of the study, it was decided to maintain the two groups. Thus there are separate tables of data for each. Statements made about Group I can thereby be checked against Group II to lend support to the trends reported and discussed here and in Chapter IV.

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[8] The preliminary report was a dissertation: John M. Keen, *An Exploration of the Linguistic Structure of Second and Fifth Grade Teachers' Oral Classroom Language*. Kent State University, 1965. Available from Kent on Inter Library loan or from University Microfilms, Ann Arbor, Michigan.

Since there was no logical basis for considering the successive tapings of a single teacher as replications, the four 40 minute transcripts for each teacher ~~was~~ were pooled to make one 160 minute sample of each teacher's language except for the analysis by content area where each forty minute transcript is considered separately and the analysis of nominals used as subjects where only one forty minute session was used. To restate, the findings present data on ten teachers at the second grade level and eleven teachers at the fifth grade level, rather than on the number of recorded sessions at each grade level, with the exceptions noted.

Fluency

Amount of Language

Tables 3 and 3A summarize measures of central tendency and variability for words, communication units, and mazes. In comparing the absolute amounts across the two groups it should be remembered that there was a mean session sampling time difference of approximately one and one-half minutes which for Tables 3 and 3A means almost five

TABLE 3

MEASURES OF CENTRAL TENDENCY AND VARIABILITY FOR WORDS, COMMUNICATION UNITS, AND MAZES: FIVE SECOND- AND FIVE FIFTH-GRADE TEACHERS: GROUP I

Grade	Mean	σ	Median	Range
Total Number of Words				
2	11,654.60	2,240.55	11,161	9,249-15,351
5	13,501.00	2,429.72	13,805	9,323-16,244
Number of Communication Units				
2	1,756.00	234.35	1,734	1,489-2,180
5	1,731.00	328.05	1,773	1,215-2,192
Total Number of Words in Communication Units				
2	11,429.80	2,174.75	10,911	9,098-15,031
5	13,191.40	2,342.70	13,582	9,154-15,912
Average Number of Words per Communication Unit				
2	6.48	0.55	6.40	5.67-7.26
5	7.72	1.10	8.34	5.66-8.66
Number of Mazes				
2	103.60	31.77	97	62-143
5	124.80	42.23	113	74-162
Total Number of Words in Mazes				
2	224.80	67.71	250	138-320
5	309.60	125.69	289	169-535
Average Number of Words per Maze				
2	2.19	0.32	2.22	1.82-2.73
5	2.47	0.43	2.48	1.78-2.94

Note: All figures represent totals from all four transcripts of each teacher.

TABLE 3A

MEASURES OF CENTRAL TENDENCY AND VARIABILITY FOR WORDS, COMMUNICATION UNITS, AND MAZES: FIVE SECOND- AND SIX FIFTH-GRADE TEACHERS: GROUP II

Grade	Mean	[illegible]	Median	Range
Total Number of Words				
2	13,251.80	2,931.21	14,494	9,560-16,296
5	12,636.80	2,880.66	11,994	8,624-16,613
Number of Communication Units				
2	1,974.00	397.75	2,136	1,456-2,427
5	1,860.00	402.44	1,694	1,478-2,495
Total Number of Words in Communication Units				
2	12,947.40	2,725.72	14,140	9,475-15,782
5	12,195.20	2,613.27	11,732	8,443-15,626
Average Number of Words Per Communication Unit				
2	6.56	.51	6.29	5.83-7.23
5	6.56	.45	6.77	5.71-6.97
Number of Mazes				
2	171.20	160.67	104	29-465
5	219.83	122.82	180	82-420
Total Number of Words in Mazes				
2	302.40	291.01	201	38-844
5	441.33	294.22	329	165-987
Average Number of Words Per Maze				
2	1.78	.23	1.82	1.31-1.93
5	2.01	.23	1.87	1.61-2.35

Note: All figures represent totals from all four transcripts of each teacher.

and one-half minutes difference. The variability within each group was almost too large to handle. The total number of words used by teachers in second and fifth grade classrooms showed a range from a total of 8,624 for a fifth grade teacher in Group II to 16,613 for a fifth grade teacher in Group II.

For the teachers at the two grade levels, little difference exists in the number of communication units used. The mean number for second grade teachers was slightly higher in both groups.

Mazes are produced infrequently by teachers at either grade level. For second grade teachers in Group I the percent of mazes to communication units was 5.9 percent; for second grade teachers in Group II, 8.6 percent. For fifth grade teachers, the percent was 7.2 for Group I, and 11.8 for Group II. The percent of total words in mazes to total words per teacher was 1.9 for second-grade teachers in Group I, 2.3 percent in Group II; and 2.3 percent for fifth-grade teachers in Group I and 3.5 percent for Group II. The wider range and greater standard deviation for the use of mazes in Group II can be accounted for by one teacher at each grade level who was particularly profuse in the use of mazes.

For all amounts of language, an inspection of the table indicates that there is a great deal of overlap between groups and trifling differences in the means; consequently a formal test for differences between the means was not deemed necessary. The somewhat larger standard deviation for fifth-grade teachers in Group I suggests that fifth-grade teachers may differ more from each other with respect to the amounts of language used than do second-grade teachers. However, this suggestion is not supported in the standard deviations for Group II. An analysis of the data by content area for each transcript at each of the two grade levels was made to determine the possibility of this aspect as a differentiating factor. Table 4 presents the mean number of communication units and the mean number of words in communication units by content area for all sessions. Fifth grade teachers in both groups used more communication units in mathematics than in any other subject. English for second-grade teachers in both groups contained considerably fewer communication units than all other content areas, with the exception of art, a difference probably due to the demonstration nature of handwriting (content for parts of the English period), the terse nature of many spelling sessions, and teachers' intensive observation of pupils in these same periods.

Vocabulary Diversity

As a measure of style, a vocabulary diversity measure, the type/token ratio was used. A two thousand word sample was obtained by random selection of five-100 word units from each transcript. The results of this measure are presented in Table 5 ~~and 5A~~. No differences were noted in the ratio of different words to the total sample of words (2000) collected from each teacher for either group.

TABLE 4

MEAN NUMBER OF COMMUNICATION UNITS AND WORDS IN COMMUNICATION UNITS FOR FORTY-FOUR 40 MINUTE SESSIONS

	GROUP I			GROUP II		
Content (by Grade)	Number of Sessions[a]	Mean No. of Com. Units Per Session	Mean No. of Total Wds. in Com. Units	Number of Sessions[a]	Mean No. of Com. Units Per Session	Mean No. of Total Wds. in Com. Units
Second Grade						
Reading	11.5	398.40	2526.20	10.5	534.76	3499.42
English[b]	3.5	332.11	2247.11	6.0	402.70	2680.50
Social Studies	0.0	---	---	0.0	---	---
Science	0.5	414.00[c]	2009.00[c]	1.0	529.50	3713.50
Mathematics	4.0	488.37	3078.75	2.5	523.70	3278.40
Art	0.5[d]	293.00[c]	2299.00[c]	0.0	---	---
Fifth Grade						
Reading	3.0	443.67	3644.33	6.5	429.46	2914.30
English[b]	2.5	429.80	3235.00	6.0	446.25	2797.50
Social Studies	6.0	388.33	2912.50	5.5	509.36	3417.72
Science	4.0	451.00	3686.75	3.0	430.66	3087.66
Mathematics	4.5	470.11	3255.44	2.5	587.60	3386.00
Art	0.0	---	----	0.5	257.00[c]	912.50

[a] These cases were calculated to the nearest half period.

[b] Includes grammar, spelling, hardwriting, composition.

[c] Estimated.

[d] On this transcript, the teacher was moving back and forth between a reading group and the remaining students working on safety posters at their desks. Comments by the teacher were terse.

TABLE 5

MEAN, STANDARD DEVIATION, MEDIAN, RANGE, AND VOCABULARY DIVERSITY INDEX OF DIFFERENT WORDS IN A 2000 WORD SAMPLE, BY GRADE

Group I

Grade	Mean No. Diff. Wds.	σ	Median	Range	Type/Token Ratio
2	824.6	25.22	819	795-867	.4123
5	857.6	23.74	854	841-902	.4283

NOTE: N = 5 at each grade level

Group II

2	825.4	33.03	829	786-873	.4127
5	868.8	45.39	870	841-899	.4344

NOTE: N = 5 at second grade, N = 6 at fifth grade level.

Effectiveness and Control

Patterns of Structure

The teacher's oral language was analyzed for evidence on the extend and variability of use of basic structural (sentence) patterns of the English language. Each communication unit was classified and tallied as presented in Table 6. Both second- and fifth-grade teachers extensively used partials, questions, the subject-verb-transitive verb complement (1-2-4), commands, subject-linking verb-complement (1-(2)-5), and subject-verb (1-2) patterns. They did not frequently use the subject-verb-inner complement-transitive verb complement (1-2-3-4), the subject-verb-transitive verb complement-outer complement (1-2-4-6), complement-subject-verb (4-1-2), subject-intransitive verb-transitive verb complement (1-2-(2-4) or other patterns. No differences in varying these patterns were noted

TABLE 6

STRUCTURAL PATTERNS: MEAN NUMBER USED AND PERCENT OF TOTAL NUMBER OF PATTERNS USED, BY GRADE

	GROUP I				GROUP II			
Pattern	Gradé 2		Grade 5		Grade 2		Grade 5	
	Mean No. Used	%	Mean No. Used	%	Mean No. Used	%	Mean No. Used	%
1) 1-2	141.6	8.1	143.6	8.3	144.0	7.4	157.7	8.6
2) 1-2-4	328.8	18.7	339.6	19.5	320.4	16.5	339.7	18.5
3) 1-(2)-5	147.4	8.4	172.4	10.0	171.0	8.8	198.3	10.8
4) 1-2-3-4	16.0	0.9	12.2	0.7	11.8	.6	10.8	.6
5) 1-2-4-6	6.0	0.3	4.6	0.3	6.8	.4	5.0	.3
6) (1)-(2)-1	33.4	1.9	35.8	2.1	19.0	1.0	15.8	.9
7) Question	334.2	19.0	313.2	18.1	385.4	19.8	290.7	15.8
8) Passive	8.0	0.5	22.8	1.3	15.0	.8	22.7	1.2
9) Command	214.4	12.2	153.8	8.9	303.2	15.6	226.3	12.3
10) Partial	516.4	29.4	517.8	29.9	537.8	27.5	543.2	29.5
11) 4-1-2	1.0	0.1	5.8	0.3				
12) 1-2-(2-4)	5.6	0.3	6.2	0.4	31.8[a]	1.6	28.5	1.5
13) Others	3.2	0.2	3.2	0.2				
TOTALS	1756.0	100.0	1731.0	100.0	1946.2	100.0	1838.7	100.0

NOTE: N = 5 at each grade level

N = 5 at second grade, N = 6 at fifth grade
a-for the analysis of Group 2, these were all grouped as others.

between second-grade teachers and fifth-grade teachers with two notable exceptions. Second grade teachers in both groups used more questions and commands than did fifth grade teachers. However, even this difference was minor in terms of the percentages.

Manipulation of Component Parts

The teachers in both groups used all of the relatively few major structural patterns of the English language. Little difference was noted in their use between groups of teachers. However, it was hoped, following Loban's study (1963), that an examination of varying elements within these structural patterns would provide opportunities to maximize possible differences that might exist in teachers' classroom language. Consequently, three of the many possible areas where such variety might occur were examined: the kinds of nominals used as subjects, the kinds of nominals used as complements (all but predicate adjective), and the kinds of movables used as adverbials. These were tabulated for all patterns except partials.

Nominals Used as Subjects--There are six kinds of nominals that can ordinarily be used as sentence subjects: nouns, pronouns, verbs, infinitives, prepositional phrases, and clauses. Early analysis indicated that the results would show almost complete dependence upon nouns and pronouns as subjects. Consequently, only the fourth transcript from each teacher was tallied. The results are presented in Table 7. The heavy use of pronouns is probably a reflection of the large number of questions and commands, and the frequency of such statements as "That is nice." No major difference occurred between second- and fifth grade teachers in either group.

Nominals Used as Complements--The nominals that can ordinarily be used as complements are the same as for subjects. The results of the analysis of all aggregate tallies for all transcripts of each teacher are shown in Table 8. The data indicates that the variety of nominals used as complements was much greater than that of nominals used as subjects. Nouns are used more than pronouns, but clauses and infinitives form a substantial proportion and do indicate much greater flexibility in kinds of complements in relation to the six that might occur in this position. No major differences between grade levels are indicated.

Movables--The adverbial elements classified as movable in the English language present another possibility for variability. The results of this analysis are presented in Table 9. An inspection of this table indicates that teachers are quite free in using movables. They use words and phrases much more than they do clauses and combinations.. No major differences between grade levels are indicated.

TABLE 7

MEAN, MEDIAN, AND PERCENT OF VARIOUS NOMINALS USED AS SUBJECTS, BY GRADE *

Nominal	GROUP I						GROUP II					
	Grade 2			Grade 5			Grade 2			Grade 5		
	Mean	Median	Percent	Mean	Median	Percent	Mean	Median	Percent	Mean	Median	Percent
Nouns	46.8	47.0	14.4	43.8	51.0	15.1	58.0	69.0	17.2	40.0	40.0	13.9
Pronouns	276.6	274.0	85.1	229.4	249.0	83.4	279.0	287.5	82.8	246.0	243.0	85.5
Verbals	0.4	---	0.1	0.8	---	0.3	0.0	---	---	0.0	0.0	---
Infinitives	0.0	---	0.0	1.2	---	0.4	0.0	---	---	1.0	3.0	0.3
Prep. Phrases	0.2	---	0.1	0.0	---	0.0	0.0	---	---	0.0	---	---
Clauses	1.2	---	0.4	0.4	---	0.2	0.0	---	---	0.7	1.5	0.2

NOTE: These figures were obtained from the fourth transcript of each of the five teachers at both grade levels.

NOTE: These figures were obtained from the fourth transcript of five teachers at second grade and six teachers at fifth grade level

* Results are the result of the analysis of one session per teacher.

TABLE 8

MEAN, MEDIAN, AND PERCENT OF VARIOUS NOMINALS USED AS COMPLEMENTS, BY GRADE

Nominal	GROUP I						GROUP II					
	Grade 2			Grade 5			Grade 2			Grade 5		
	Mean	Median	Percent	Mean	Median	Percent	Mean	Median	Percent	Mean	Median	Percent
Nouns	419.2	430.0	47.3	421.2	430.0	48.0	470.2	459.5	47.4	404.3	415.0	45.9
Pronouns	254.0	248.0	28.7	238.4	263.0	28.1	332.6	341.0	33.5	309.2	330.0	35.1
Verbals	14.0	10.0	1.6	11.4	9.0	1.5	6.2	6.0	.6	7.0	9.0	.8
Infinitives	58.0	56.0	6.6	48.2	42.0	6.1	30.0	29.5	3.0	29.5	37.0	3.3
Prep. Phrases	0.6	---	0.1	0.4	---	0.1	.4	.5	.1	1.2	2.0	.1
Clauses	140.0	134.0	15.8	145.4	158.0	16.0	153.2	151.5	15.4	129.5	145.0	14.7

NOTE: N = 5 at each grade level

N = 5 at second grade level
N = 6 at fifth grade level

TABLE 9

MEAN, MEDIAN, RANGE, AND PERCENT OF MOVABLES USED, BY GRADE

		GROUP I				GROUP II			
Grade	Movable	Mean	Median	Range	Percent	Mean	Median	Range	Percent
2	Words	317.8	299	200-515	38.7	393.2	298	216-330	34.5
	Phrases	316.8	273	240-435	38.6	341.2	342	268-417	40.1
	Clauses	119.2	107	96-165	14.5	112.6	114	83-145	13.2
	Combinations	66.6	67	34-86	8.1	103.6	96	70-122	12.2
5	Words	287.6	260	215-422	31.8	269.5	282	213-352	35.4
	Phrases	377.6	368	279-466	41.7	315.3	338	219-458	41.4
	Clauses	147.2	140	96-217	16.3	89.8	90	55-125	11.8
	Combinations	92.2	88	74-125	10.2	86.3	104	40-168	11.4

NCTE: N = 5 at each grade level

N = 5 at second grade level
N = 6 at fifth grade level

Subordination

The use of subordination is considered one of the primary indices of grammatical complexity and thus is an important consideration in any study of effectiveness and control of language. This study employed one measure of grammatical complexity, the weighted index of subordination. Table 10 reveals that there is no essential difference in the use of subordination by teachers at each grade level.

TABLE 10

MEAN, MEDIAN, ADJUSTED MEAN, AND ADJUSTED RANGE
OF THE INDEX OF SUBORDINATION, BY GRADE

GROUP I

Grade	Mean	Median	Adjusted Mean[a]	Adjusted Range
2	528.0	473	0.045	.039-.057
5	696.8	771	0.050	.033-.065

NOTE: N = 5 at each grade level

GROUP II

2	577.6	607	0.043	.036-.054
5	520.6	486	0.041	.035-.045

NOTE: N = 5 at second grade, N = 6 at fifth grade.

[a] The adjusted mean is the mean of each group when each subject's weighted index is divided by the total number of words the subjects used. This adjusted score was computed in order to avoid favoring subjects who used more language than others.

Interrelationships Among Selected Language Variables

Of the thirty-one scores obtained for all measures, twenty-four indicated variability sufficient to permit intercorrelation of the scores and to satisfy Pearson product-moment correlation criteria. For Group I, Pearson product-moment coefficients were computed for all pairs of these variates on an IBM 1620 computer for all ten teachers and for the five teachers at each of the two grade levels.[17] For Group II, the same coefficients were computed on a Honeywell 2200. The correlation matrix for all teachers is shown in Table 11 and 11a, for second-grade teachers in Table 12 and 12a, and for fifth-grade teachers in Table 13 and 13a. On these tables, variables one through eight have been defined as measure of fluency, while variables nine to twenty-four have been defined as measures of effectiveness and control.

From the tables, correlations that indicated trends consistent across all teachers, trends that were high in one grade and low in the other, and trends that were opposites for each grade level were extracted. Since the sample was small, rather stringent limits were set upon the meanings of the correlations. The limits were set to include all significant correlations at the $p < .05$ level, using Fisher's t-ratio (Guilford, 1956, pp. 219-20) of the differences between correlations for the last two groups and of differences from zero for the combined (10-teacher) group. On this basis, the following restrictions were established to determine correlations that could be considered viable.

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[17] The linear correlation program used was IBM Users Group Program K6.0.007. It is on file in Kent State University's Computer Programs Library.

TABLE 11

GROUP I

CORRELATION MATRIX OF SCORES, 10 TEACHERS, GRADES 2 and 5 (DECIMALS OMITTED)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	--		*							*	*	*				*	*	*				*	*	
2	64	--						*		*														
3	59	64	--							*	*	*				*	*	*				*	*	
4	60	-21	60	--			*	*		*		*												
5	63	72	62	06	--	*		*						*		*			*	*				
6	80	51	78	47	86	--					*	*		*		*				*		*		
7	63	-09	63	86	07	54	--	*				*												
8	-05	06	-05	-07	-07	-12	-08	--				*	*		*	*								
9	72	17	72	72	05	37	73	-05	--			*						*	*					
10	78	78	78	20	59	56	28	-04	24	--	*					*				*		*		
11	91	67	90	44	63	78	55	-25	48	86	--	*				*	*	*			*	*	*	
12	44	57	43	04	53	39	00	40	02	52	37	--						*	*		*	*	*	
13	32	24	33	13	05	04	08	-42	64	-01	14	-16	--	*				*	*	*			*	
14	37	46	36	-10	30	42	25	-09	09	50	61	01	-16	--		*								
15	10	76	10	-63	53	10	-60	30	-30	36	08	44	05	07	--									
16	83	76	82	24	82	82	29	-35	37	74	90	47	30	50	27	--	*		*			*		
17	72	83	72	02	48	52	31	-04	47	68	77	43	33	68	36	75	--					*	*	
18	86	50	86	54	29	50	59	-17	87	56	77	22	58	41	-09	70	75	--		*		*	*	
19	10	18	10	-07	20	14	-09	26	-17	36	17	20	-35	46	08	14	05	04	--					*
20	56	71	57	-03	30	20	01	-31	32	76	66	30	43	45	30	67	70	68	31	--				*
21	66	53	66	25	47	63	48	-27	20	78	90	30	-16	75	-00	74	70	54	19	55	--	*		
22	94	61	94	56	53	78	69	06	61	79	90	46	10	44	10	74	74	74	01	43	76	--	*	
23	93	53	94	62	43	66	69	-00	82	65	81	18	38	36	04	64	67	85	-05	45	56	91	--	*
24	67	23	66	66	58	76	57	11	27	55	62	64	-25	12	-14	57	23	36	31	12	51	67	45	--

Variables:
1. Totel Wds.
2. Com. Units (CU)
3. Wds. in CU
4. Ave. No. Wds./CU
5. Mazes (M)
6. Wds. in M
7. Ave. No. Wds./M
8. Vocab. Div.
9. Sub. Index
10-15. Sent. Pat. 1,2,3,7,9,10
16-18. Compl.: Nouns, Prons., Clauses
19-20. Subject: Nouns, Prons.
21-24. Mov.: Words, Phrases, Clauses, Combinations

NOTE: The asterisks indicate correlations meeting the trend criterion in Group I.

TABLE 11A

GROUP II

CORRELATION MATRIX OF SCORES, 11 TEACHERS, GRADES 2 AND 5 (DECIMALS OMITTED)

Vari-ables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	--	*	(*)		*	*				(*)	(*)	(*)				(*)	(*)	(*)		*	*	(*)	( )	
2	93		(*)				( )			(*)		*				*	*	*		*	*	*		
3	99	93								(*)	(*)	(*)				(*)	(*)	(*)		*	*	(*)	( )	
4	26	-06	26				( )	( )		( )		( )										*		
5	78	69	74	16		(*)		( )						(*)		(*)			(*)	( )				
6	78	71	73	13	98						( )	(*)		( )		(*)		*	*	( )		(*)		
7	49	46	47	07	46	57		( )				( )												
8	-21	-40	-21	45	-17	-11	09					( )	( )		(*)	( )								
9	40	22	44	66	-04	-03	20	31		*		(*)						( )	( )					
10	93	83	92	29	78	79	57	06	40		(*)	*				(*)				( )	(*)	(*)		
11	79	65	78	38	63	68	69	16	59	82		(*)				( )	( )	(*)			( )	(*)	( )	
12	90	81	89	24	81	82	51	09	35	96	85					*		( )	( )		( )	(*)	( )	
13	67	78	68	-12	40	40	08	-69	08	40	25	38		( )			*	( )		*				
14	47	70	48	-53	23	25	10	-68	-08	23	18	26	80			( )	*							
15	31	50	33	-41	12	08	08	-39	-18	29	-13	21	40	37										
16	90	83	91	30	65	60	16	-37	34	76	56	72	74	48	31		(*)			(*)		(*)	*	
17	85	95	85	-16	58	60	43	-45	26	71	65	73	80	76	41	72		*		*	*	( )	( )	*
18	86	81	86	22	63	66	50	-28	50	71	86	74	65	56	-04	74	84			( )		(*)	( )	*
19	67	59	65	25	75	67	11	-57	10	48	43	49	62	38	-00	76	54	70				*		( )
20	88	94	89	-00	56	57	35	-42	24	71	53	70	87	71	52	84	89	75	54		*			( )
21	83	89	85	-06	42	47	54	-26	44	73	71	71	64	71	39	69	89	82	35	85		( )		
22	93	88	92	19	79	82	45	-23	26	81	76	84	70	56	11	85	81	88	70	85	77		( )	
23	76	66	77	38	50	40	08	-40	42	59	49	58	58	33	31	88	59	66	74	69	57	65		( )
24	63	59	64	22	39	32	12	-22	15	58	18	47	44	19	69	74	37	24	36	65	46	46	72	

Variables:
1. Total Wds.
2. Com. Units (CU)
3. Wds. in CU
4. Ave. No. Wds./CU
5. Mazes (M)
6. Wds. in M
7. Ave. No. Wds./M
8. Vocab. Div.
9. Sub. Index
10-15. Sent. Pat. 1,2,3,7,9,10
16-18. Compl.: Nouns, Prons., Clauses
19-20. Subject: Nouns, Prons.
21-24. Mov.: Words, Phrases, Clauses, combinations

NOTE: The asterisks indicate correlations meeting the trend criterion in Group II. The parentheses indicate correlations meeting the trend criterion in Group I. Asterisks within parentheses thus indicate those used in the discussions.

TABLE 12

GROUP I

CORRELATION MATRIX OF SCORES, 5 TEACHERS, GRADE 2 (DECIMALS OMITTED)

Vari- ables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	--		*							*	*	*				*	*	*				*	*	
2	92	--						*		*														
3	99	92	--							*	*	*				*	*	*				*	*	
4	76	45	76	--			*	*		*		*												
5	74	86	73	27	--	*		*						*		*			*	*				
6	94	91	94	67	88	--					*	*		*		*				*		*		
7	45	10	46	88	-16	32	--	*				*												
8	-62	-72	-61	-23	-93	-83	12	--				*	*		*	*								
9	55	43	55	55	26	57	61	-45	--			*						*	*					
10	90	78	90	77	60	79	43	-37	19	--	*					*				*		*		
11	98	91	98	72	64	86	44	-46	45	93	--	*				*	*	*			*	*	*	
12	86	62	86	92	34	74	84	-32	76	73	83	--						*	*		*	*	*	
13	13	29	12	-19	57	40	-30	-80	47	-23	-05	-03	--	*				*	*	*			*	
14	29	22	30	27	-24	-03	31	51	-11	47	48	34	-79	--		*								
15	37	67	36	-29	83	50	-65	-72	-08	25	33	-14	55	-20	--									
16	94	99	93	50	88	95	16	-79	53	75	89	67	39	11	64	--	*		*			*		
17	81	72	82	66	36	68	61	-34	82	58	82	89	10	41	07	75	--					*	*	
18	89	67	89	59	56	79	44	-49	73	67	89	83	19	38	31	88	97	--		*		*	*	
19	-19	-25	-19	-02	-23	-31	-12	50	-84	26	-07	-29	-78	42	-16	-35	-51	-47	--					*
20	95	94	95	61	80	89	23	-59	26	94	95	67	03	35	53	91	64	77	05	--				*
21	88	75	88	76	38	68	59	-18	42	89	95	86	-31	69	07	72	83	85	04	84	--	*		
22	94	78	94	86	47	80	69	-35	62	86	95	96	-09	48	06	79	90	90	-17	83	96	--	*	
23	99	93	99	71	68	90	45	-55	58	87	99	86	09	39	36	93	88	94	-23	93	92	95	--	*
24	81	55	82	96	39	72	75	-27	36	90	80	86	-25	34	-12	57	58	57	17	75	81	86	76	--

Variables:
1. Total Wds.
2. Com. Units (CU)
3. Wds. in CU
4. Ave. No. Wds./CU
5. Mazes (M)
6. Wds. in M
7. Ave. No. Wds/M
8. Vocab. Div.
9. Sub. Index
10-15. Sent. Pat. 1,2,3,7,9,10
16-18. Compl.: Nouns, Prons., Clauses
19-20. Subject: Nouns, Prons.
21-24. Mov.: Words, Phrases, Clauses, Combinations

NOTE: The asterisks indicate correlations meeting the trend criterion in Group I.

TABLE 12A

GROUP II

CORRELATION MATRIX OF SCORES, 5 TEACHERS, GRADE 2 (DECIMALS OMITTED)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	--	*	(*)		*	*				(*)	(*)	(*)				(*)	(*)	(*)		*	*	(*)	( )	
2	90	--	*					( )		(*)		*				*	*	*		*	*	*		
3	99	91	--							(*)	(*)	(*)				(*)	(*)	(*)		*	*	(*)	( )	
4	37	-05	35	--			( )	( )		( )		( )												
5	72	54	67	41	--	(*)		( )						(*)		(*)			(*)	( )		*		
6	73	53	67	44	99	--					( )	(*)		( )		(*)		*	*	( )		(*)		
7	40	38	40	-01	23	27	--	( )				( )												
8	-16	-46	-14	69	-34	-30	-00	--				( )	( )		(*)	( )								
9	66	48	69	58	10	13	31	54	--	*		(*)						( )	( )					
10	96	78	96	53	64	66	49	09	79	--	(*)	*				(*)				( )	(*)	(*)		
11	85	60	85	67	59	62	56	30	82	96	--	(*)				( )	( )	(*)			( )	(*)	( )	
12	96	76	96	59	71	72	-39	07	76	98	94	--				*		( )	( )		( )	(*)	( )	
13	43	69	44	-41	24	20	-29	-72	-02	19	-06	23	--	( )			*	( )	( )	(*)			( )	
14	26	65	28	-76	-04	-08	08	-76	-10	05	-17	01	82	--		( )	*							
15	26	64	29	-78	-08	-10	30	-70	-05	09	-10	02	67	97	--									
16	95	82	94	46	80	79	16	-17	57	89	77	93	50	17	11	--	(*)		(*)			(*)	*	
17	82	98	84	-15	42	40	24	-50	44	68	47	66	80	74	71	76	--	*		*	*	( )	( )	*
18	99	86	99	43	75	76	41	-12	66	97	88	97	37	18	19	96	78	--		( )		(*)	( )	*
19	67	54	61	29	97	96	06	-48	-01	54	44	62	40	06	-01	78	45	69	--					( )
20	75	95	77	-24	32	30	16	-53	39	59	37	57	84	80	76	69	99	70	38	--	*			( )
21	74	83	77	-06	15	16	63	-10	69	74	64	65	35	54	64	54	81	70	07	78	--	( )		
22	94	75	92	55	85	86	22	-11	56	90	82	95	36	04	-00	98	66	96	81	58	48	--	( )	
23	95	86	93	29	87	87	36	-36	42	86	75	89	48	27	25	95	78	95	84	70	58	95	--	( )
24	85	92	86	-05	52	52	70	-37	48	80	68	74	41	53	62	69	85	83	45	79	89	66	82	--

Variables:
1. Total Wds.
2. Com. Units (CU)
3. Wds. in CU
4. Ave. No. Wds./CU
5. Mazes (M)
6. Wds. in M
7. Ave. No. Wds./M
8. Vocab. Div.
9. Sub. Index
10-15. Sent. Pat. 1,2,3,7,9,10
16-18. Compl.: Nouns, Prons., Clauses
19-20. Subject: Nouns, Prons.
21-24. Adv.: Words, Phrases, Clauses, Combinations

NOTE: The asterisks indicate correlations meeting the trend criterion in Group II. The parentheses indicate correlations meeting the trend criterion in Group I. Asterisks within parentheses thus indicate those used in the discussions.

TABLE 13

GROUP I

CORRELATION MATRIX OF SCORES, 5 TEACHERS, GRADE 5 (DECIMALS OMITTED)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	--		*							*	*	*				*	*	*				*	*	
2	58	--						*		*														
3	99	57	--							*	*	*				*	*	*				*	*	
4	43	-48	44	--			*	*		*		*												
5	50	71	47	-28	--	*		*						*		*			*	*				
6	70	44	68	23	85	--					*	*		*		*				*		*		
7	67	-17	66	88	04	54	--	*				*												
8	-05	73	-04	-83	24	-24	-74	--				*	*		*	*								
9	80	14	81	72	-13	22	75	-26	--			*						*	*					
10	81	94	80	-18	72	61	15	49	40	--	*					*				*		*		
11	94	52	93	42	67	90	71	-20	62	75	--	*				*	*	*			*	*	*	
12	05	63	04	-59	56	13	-63	71	-33	44	02	--						*	*		*	*	*	
13	66	21	69	52	-26	-05	48	02	94	39	40	-17	--	*				*	*	*			*	
14	82	61	80	16	83	95	55	-07	36	78	95	10	14	--		*								
15	00	81	00	-89	48	01	-66	94	-36	59	-04	66	-17	17	--									
16	84	62	82	20	84	91	43	-01	38	78	91	39	21	90	13	--	*		*			*		
17	88	39	88	-05	67	63	28	39	52	99	81	34	48	81	48	79	--					*	*	
18	92	36	93	61	15	42	68	-13	95	60	76	-05	88	54	-20	63	70	--		*		*	*	
19	96	58	55	00	71	60	01	24	16	61	56	76	14	52	23	83	58	46	--					*
20	75	65	76	13	22	19	15	42	69	73	51	42	80	34	27	55	76	83	62	--				*
21	70	38	68	28	78	98	63	-32	27	57	90	-05	-02	96	-05	84	61	42	44	11	--	*		
22	93	64	92	26	60	78	64	-02	63	94	94	-04	47	92	15	80	90	74	39	55	82	--	*	
23	90	44	91	47	22	50	74	-11	87	68	81	-29	75	69	-06	56	78	86	16	62	57	91	--	*
24	41	14	39	29	67	75	29	-30	04	25	57	41	-15	54	-21	78	25	28	82	17	63	29	03	--

Variables:				
1. Total Wds.	5. Mazes (M)	8. Vocab. Div.	16-18. Compl.: Nouns, Prons., Clauses
2. Com. units (CU)	6. Wds. in M	9. Sub. Index	19-20. Subject: Nouns, Prons.
3. Wds. in CU	7. Ave. No. Wds./M	10-15. Sent. Pat. 1,2,3,7,9,10	21-24. Mov.: Words, Phrases, Clauses, Combinations
4. Ave. No. Wds./CU			

NOTE: The asterisks indicate correlations meeting the trend criterion in Group I

TABLE 13A

GROUP II

CORRELATION MATRIX OF SCORES, 6 TEACHERS, GRADE 5 (DECIMALS OMITTED)

Vari- ables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	--	*	(*)		*	*				(*)	(*)	(*)				(*)	(*)	(*)		*	*	(*)	( )	
2	97	--	*					( )		(*)		*				*	*	*		*	*	*		
3	99	96	--							(*)	(*)	(*)				(*)	(*)	(*)		*	*	(*)	( )	
4	15	-83	19	--			( )	( )		( )		( )												
5	93	97	92	-12	--	(*)		( )						(*)		(*)			(*)	( )		*		
6	91	96	90	-14	98	--					( )	(*)		( )		(*)		*	*	( )		(*)		
7	74	72	73	16	88	77	--	( )				( )												
8	-32	-43	-31	35	-33	-42	-61	--				( )	( )		(*)	( )								
9	49	-14	77	84	-25	-20	26	23	--	*		(*)						( )	( )					
10	96	96	96	17	95	92	65	-37	-17	--	(*)	*				(*)				( )	(*)	(*)		
11	79	79	79	79	67	73	82	-43	31	65	--	(*)				( )	( )	(*)			( )	(*)	( )	
12	94	97	94	-89	93	89	57	-28	-15	94	75	--				*		( )	( )		( )	(*)	( )	
13	95	93	95	15	90	93	90	-47	11	90	85	84	--	( )			*	( )	( )	(*)			( )	
14	66	79	64	-50	79	83	59	-40	-30	64	74	77	69	--		( )	*							
15	39	37	40	44	42	28	-17	98	-44	56	-18	44	18	-69	--									
16	95	90	95	21	85	80	57	-27	-77	96	63	90	85	47	61	--	(*)		(*)			(*)	*	
17	87	93	86	-17	85	89	79	-55	-38	82	93	89	89	88	47	74	--	*		*	(*)	( )		*
18	76	76	76	68	67	74	85	-44	32	62	98	71	84	77	-26	57	91	--		( )		(*)	( )	*
19	93	88	93	27	82	86	91	-40	28	83	88	80	98	63	84	81	87	89	--			*		( )
20	99	96	99	17	93	90	72	-27	66	95	78	94	94	66	40	95	86	76	92	--	*			( )
21	92	95	91	-69	89	90	76	-41	20	86	92	93	91	86	11	80	98	90	90	92	--	( )		
22	96	97	96	11	94	95	79	-36	19	91	87	94	95	81	21	85	95	86	93	96	98	--	( )	
23	65	52	68	55	39	31	23	38	41	58	50	61	50	60	47	77	42	40	55	67	51	51	--	( )
24	59	49	60	38	50	38	79	10	-83	67	50	53	41	-72	91	78	17	-25	36	60	27	38	71	--

Variables:
1. Total Wds.
2. Com. Units (CU)
3. Wds. in CU
4. Ave. No. Wds./CU
5. Mazes (M)
6. Wds. in M
7. Ave. No. Wds/M
8. Vocab. Div.
9. Sub. Index
10-15. Sent. Pat. 1,2,3,7,9,10
16-18. Compl.: Nouns, Prons., Clauses
19-20. Subject: Nouns, Prons.
21-24. Mov.: Words, Phrases, Clauses, Combinations

NOTE: The asterisks indicate correlations meeting the trend criterion in Group II. The parentheses indicate correlations meeting the trend criterion in Group I. Asterisks within parentheses thus indicate those used in the discussions.

In Group I for trends across all teachers, correlations between given variables had to be greater than ±.75 across all three matrices. For trends that were directional (loaded to one grade level) the correlation for the "directional" grade level had to be greater than ±.75, while for the other grade level, the correlation had to be not greater than ±.20 in the same direction. In addition, the average of the two 5-teacher group correlations had to be near the corresponding value from the 10-teacher group (see Table 11). For trends that indicate opposite directions for the two grade levels, the differences had to be at least four standard errors apart (Guilford, 1956, pp. 178-79), i.e., greater than ±.75 for one and less than $\lessgtr$.75 for the other or conversely.

When the correlations were run for Group II, the regions of acceptance were relaxed somewhat to accomodate the slightly greater number. For trends across all teachers, the correlations had to be greater than ±.72 across the two grade level matrices and ±.60 for the combined grade matrix. For directional trends, the correlation had to be ±.72 for the one grade level, while for the other grade level the trend had to be not greater than ±.25 in the same direction. The average of the two group correlations had to be near the corresponding value for the 11 teacher group (See Table 11a). For trends that indicate opposite directions for the two grade levels, the correlation had to be ±.72 for one and less than $\lessgtr$.72 for the other. Some relaxation of the criteria were accepted when support for the trends in Group I seemed to justify it.

Since the method of generating certain scores made them internally dependent upon each other, their intercorrelations were not given interpretive consideration. These clusters of interdependent variables were communication units, words in communication units, and average number of words in communication units (variables 2, 3, 4), and mazes, words in mazes, and average number of words in mazes (variables 5, 6, 7).

The findings of the correlational analysis are reported below. The statements are interpreted only as trends because of the small number of subjects involved. These findings all meet the specified confidence level. Of course, the converses of all statements are true. It should be specifically noted that these findings refer only to trends that were found in both Group I and Group II, and not to trends for one of the groups independent of the other[18]. Tables 11 through 13a are the basis for all statements. The trends for each group are coded with asteriks. The trends for both groups are noted in the "a" tables by the asteriks with parenthesis around them.

Trends Across all Teachers

The trends reported in this section were obtained for the 10-teacher Group I and the 11-teacher Group II. None are really surprising. All are supported by positive correlations.

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[18] The earlier report on Group I identified a number of additional trends that were not supported by the data from Group II. For readers not familiar with this report, these trends are included in this report as Appendix D . Tables 11 through 13a provide information for anyone interested in the trends for specific variables in each group.

1. Teachers who use more words (1)[19] use more words in communication units (3).

2. Teachers who use sentence pattern one (10) more make use of sentence pattern two (11) more.[20]

3. Teachers who use more words (1) and/or more words in communication units (3) use more complements (16-18) and also more phrase movables (22).

4. Teachers who use more nouns as complements (16) use more phrase and clause movables (22-23).

5. Teachers who use more clauses as complements (18) use more phrase movables (22).

6. Teachers who use sentence pattern one (10) more, use more words (1), use more communication units (2), use more words in communication units (3), use more noun complements (16) and use more word and phrase movables (21, 22).

7. Teachers who use sentence pattern two (11) more, use more words (1), use more words in communication units (3), use more clause complements (18), and use more phrase movables (22).

8. Teachers who use more phrases as movables (22) use more words in mazes (6).

9. Teachers who use more nouns as complements (16) use more mazes (5), and more words in mazes (6).

10. Teachers who use more nouns as complements (16) use more pronouns as complements (17).

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[19] Numbers in parenthesis refer to numbers assigned to variables in Tables 11 to 13a. They are specifically identified by the symbols: (*) in Tables 11a, 12a, 13a.

[20] Sentence patterns were discussed in detail on pp. 36-37 Supera.

Directional Trends

More important to the intent of the study are the observations made from correlations that are high for only one grade level and near zero for the other grade level. Trends cited for second-grade were not obtained in fifth-grade and conversely. It is possible that with a greater sample, each of the following trends would show significant grade level interactions, i.e., differences would be attributable to grade level. If is interesting to note that fifteen of these were identified in the original study. Only two were supported when Group II was added.

1. Second-grade teachers who use sentence pattern three (12) more, have a higher subordination index (9).

2. Fifth grade teachers who use more mazes (5) use sentence pattern nine (14) more.

Opposite Trends

Only one opposite trend was supported across both Group I and Group II. This trend suggests one of the greatest distinct differences between the grade levels. The trend is slightly weaker in Group II than in Group I, but clearly defensible.

1. Second-grade teachers who have a greater number of partials (15) use fewer different words (8), while fifth-grade teachers who have a greater number of partials (15) have a greater number of different words (8).

SHIFTS

In the analysis of Group I, several trends across all teachers were noted that had been directional in the analysis of Group I. They are included in the report because of their curious nature and because they represent possibly important descriptors for at least one grade level. The shift could be due to some chance of the grouping or to a breakdown in the coding directions for Group II. No evidence of the latter was found in checking the coding used for the items involved.

1. In Group I, it was noted that second grade teachers who used sentence pattern three (12) more, used more words (1), more words in communication units (3), more words in mazes (6), and more phrase movables (22). This was true of fifth-grade teachers as well as second-grade teachers in Group II.

2. In Group I, it was noted that fifth-grade teachers who used more nouns as subjects (19), had more mazes (5) and used more nouns as complements (16). This was true of second-grade teachers as well as fifth-grade teachers in Group II.

CONCLUSIONS

Major findings of this study are summarized below:

1) With respect to amounts of language used (total number of words, etc.): second-grade teachers as a group and fifth-grade teachers as a group did not differ markedly.

2) With respect to vocabulary diversification: second-grade teachers as a group and fifth-grade teachers as a group did not differ from each other.

3) With respect to sentence patterns: all major sentence patterns were used by all teachers at both grade levels. The sentence patterns used most by teachers at either grade level were partials, questions, subject-verb-transitive verb complement (1-2-4), commands, subject-linking verb-complement (1-(2)-5), and subject-verb (1-2).

4) With respect to sentence components:
    a. Nominals used as sentence subjects by teachers at either grade level were almost exclusively nouns and pronouns.
    b. Nominals used as complements by teachers at either grade level were primarily nouns, pronouns, and clauses. However, infinitives and other verb phrases were used regularly.
    c. Movables used most frequently by all teachers are words and phrases, although clauses and combinations were used somewhat.

5) With respect to the use of subordination: the two groups of teachers were not markedly different on the adjusted subordination index.

6) With respect to relations across all teachers:
    a. Two sentence patterns (the subject-verb pattern (1-2) and subject-verb-transitive verb complement (1-2-4)) were the most frequently correlated with other variables, including total words, total words in communication units, some nominals as complements, and some movables.

7) Two relationships across teachers at one grade level were supported:
    a. For second-grade teachers, the use of sentence pattern three was highly correlated with their index subordination.
    b. For fifth grade teachers the use of mazes was highly correlated with the use of commands.

8) One opposite trend across grade levels was supported: For second-grade teachers the use of partials was negatively correlated with the index of vocabulary diversity. For fifth-grade teachers, this correlation was positive.

9) A number of variables singled out as trends for one grade in Group I were supported across both grades in Group II.
   a. The use of the linking verb sentence pattern was highly correlated with number of words, words in communication units, words in mazes, and phrase movables.
   b. The use of nouns as subjects was highly correlated with words in mazes, and nouns as complements.

CHAPTER IV

DISCUSSION

The discussion will be limited to speculations that involve the two most obvious areas to which this study is relevant: the teachers' oral language as a linguistic model for children; and the teachers' oral language as a variable in studies of teaching behavior. Some comments on the nature of the criterion measures will be made.

The Teacher's Language as a Linguistic Model for Children

The results of this study highlight the necessity for greater understanding of the influence of teacher-language as a resource in pupils' learning to use the structure of the English language. This study has provided information about the structure of teachers' language that needs to be compared with knowledge about children's language. Many questions can be generated concerning the present lack of information that this study can only begin to answer. What structures are used most by children; by teachers? What is the real effect of teachers' language compared to the language of television or of parents or of peers upon the development of the child's language structure, subsequent to entering school? Indeed, can the teacher exert any influence along such lines? The assumption has been that "impeccable" language of the teacher was important, that a teacher who used poor structure (or poor grammar) was a bad, even disgraceful, influence upon children. In fact, language arts teacher-training experts have assumed that teachers' language should be a model for children without even stopping to wonder about how much the teacher's language was under the teacher's own control or even how much he knew about his language. Little attention, too, was given to ways that teachers might modify or control the language that they use by judicious application of principles of rhetoric and of language, generally. The following example indicates the exhortatory state of common expectancies of teachers' language as a model for children:

> The teacher's vocabulary and sentence structure naturally will be on a higher level than that of the children but should not be so high that they cannot understand or follow. If teachers use language on the level of the children's own language, there is little incentive for improvement. If it is too far above their level, the child's own personal language is left untouched.
>
> Strickland, 1962a, p. 5.

To begin the task of seeking answers to the questions raised, some comparisons will be made between the results of this study and those of Loban (1963). Such comparisons can only be speculative, at best. Indeed, it is somewhat unfair deliberately to compare findings of California children's language and Ohio teachers' language, particularly because of the small number of teachers in the present study, the probable differences in dialect between the two groups, and the difference in data-collection procedures.[21] Nevertheless, the investigator feels compelled to make the comparison, primarily to underscore the importance of the general problem and to stimulate further considerations of the role of teachers' language in influencing children's language growth.

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[21] Loban's children were presented with pictures as stimuli and were asked to tell a story about them. The situation variable is certain to have a significant effect upon the results.

In the first seven years of schooling, children use more words, more communication units, and more words in communication units in each successive year. Yet, teachers near the beginning of schooling (second grade) and teachers near the end of this period (fifth grade) use approximately the same number of words, the same number of communication units, and the same number of words per communication unit, indicating, perhaps, that what the teachers are using is a normal adult speech that is not related specifically to any differences that might separate them from their audiences.

The children in Loban's study produced almost the same precent of mazes, compared to communication units (second grade, 8.3 percent; fifth grade, 7.4 percent) as did the teachers in the present study (second grade, 7.4 percent)(fifth grade, 9.6 percent; across both grades). Since the two studies were done under extremely different circumstances, children reacting to new stimuli, and teachers in a normal situation, it seems logical that children would have used a much greater percent of mazes because they were discussing something new. Perhaps the nature of the teacher-pupil interaction or the content under discussion generated a higher incidence of mazes than Loban's conditions fostered. Yet, it would also seem that a stimulating classroom discussion should have caused more mazes in teachers' language, if thinking "on one's feet" causes people to use more mazes. A common observation of the unwary is that the speaker who produces few mazes is a fluent speaker. In fact, teachers are often judged as fluent by the absence of mazes in their speech. Consequently, it may be that teachers "think" before they "speak." However, in the ordinary "give and take" of a classroom discussion this appears to be a highly unlikely explanation. Both interpretations and explanations need careful scrutiny in future research. In any case, mazes would appear to be a variable relevant to classroom teaching because the ability to recover from them is probably a learned characteristic.

Interesting, also, are the similar proportions of the various kinds of sentence structures used by Loban's high language ability group and by the teachers in the present study. Most differences in usage would seem to be related to the large percents of questions and commands which occur in teachers' language, but which do not occur at all in the children's language sample. These differences are probably due to the situations in which the two samples were collected rather than to any difference in the way either teachers or children use sentence patterns. In a game situation, for instance, children's language would likely contain numerous questions and commands. On this basis, it can be suggested that teachers are not much different than children in the proportionate use of the several sentence structures. Consequently, under present conditions, teachers' language is not an effective model for sentence structure growth although it may be a reinforcer of already learned structures.

Additionally, second-grade teachers in the present study used a slightly lower proportion of partials (approximately 29 percent) compared to Loban's second-grade children (33 percent). Fifth-grade teachers employed a great deal more (approximately 30 percent) as compared to fifth-grade children's usage (13 percent). Apparently, the admonition to use "complete sentences" has had a greater effect upon the children than upon the teachers. Such emphasis on "complete sentences" definitely would appear to be an interesting problem for curriculum speculation and resolution. Not only do "complete sentences" seem poorly related to natural communication and to structure as it seems to occur, but they perhaps hamper children's thinking by forcing them to concentrate on "completeness."[22] The teachers themselves use what would appear to be a more normal pattern suitable for a discussion. Children in play situations would probably do likewise.

Also interesting to note is that, proportionally, teachers use the expletive sentence ((1)-(2)-1) pattern only slightly less frequently than do children in spite of the generally taught principle that this structure should be avoided (apparently because it precludes vivid and active expression). The linking-verb (1-(2)-5) pattern is used somewhat less frequently by teachers in the present study than by high-language-ability children in Loban's study. This pattern has some interesting ramifications. Loban found that the linking verb (1-(2)-5) pattern was used by his high-language-ability group, but not by his low-language-ability group. Riling (1965) found that her low-socio-economic group (low language ability) used it frequently. When asked to tell stories, Riling's low-language-ability children would simply describe what they saw in the ~~picute~~ picture (e.g., "That is a truck. The driver is a man"). In the present study, its proportionate use by second-grade teachers was the same as that for fifth-grade teachers, However, it was highly correlated with a number of other variables only for second-grade teachers. It may possibly be that "naming" something is a trait that is more common for children and possibly more regularly used by second-grade teachers in specific situations that the techniques of this study were not intended to, or perhaps were too gross to measure. For example, it was common in this study for second-grade teachers giving a spelling test to say "Dick is a little *boy*" or other similar sentence, while fifth-grade teachers would use a more complicated structure such as "Jim pulled the little *children* out of the ditch." This particular structure seems to deserve attention at both the concept and action level in order to ascertain what, if any, significance it might have in children's language generally, and in both teachers' and children's language in the instructional situation.

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[22] Lest the investigator seem to be haranguing the participating teachers, it should be made clear that this is a general observation. Language theories espoused by the behaviorists and the linguists are far from the ordinary instructions given to teachers on this point. Forcing a child to speak in complete sentences should be occasioned by some rather serious psychological reasons or the desire to build language fluency in children who are especially poor in verbal fluency (e.g., those whose utterances are so short and unexpressive that, even in context, they fail to communicate).

In regard to the elements within structural patterns, the children in Loban's study show almost the same frequency of use as did the teachers in this study. For nominals as subjects, Loban reported percents of use for nouns ranging from 18 percent for kindergarten children to 27percent for fifth-grade children, and for pronouns a range of 80 percent to 72 percent.

The teachers in this study showed a mean use for nouns in this position of approximately 15 percent, and for pronouns, approximately 84 percent.

For nominals are complements, there is relatively little difference between Loban's children and these teachers, except for clauses. Teachers, at second- and fifth-grade levels, used clauses as complements approximately 16 percent of the time. Second-grade children, high in language ability, used them only 8 percent of the time, but fifth-grade children, high in language ability, used them 13 percent of the time. It is thus possible to surmise that the use of clauses might be learned from teacher language, but more in the earlier years of elementary school than in the later years.

Loban's children and teachers in the present study differed in the use of movables also. For Loban's children at all grade levels, phrases represented approximately 48 percent of the total number of movables used, while, for second-grade teachers in the present study, phrases represented approximately 39 percent, and, for fifth-grade teachers' approximately 41 percent of the total number of movables used. The children used notably fewer combinations (range: 0 to 5 percent) at all grade levels than did the teachers in the present study (used 8 percent of the time by second-grade and 10 percent of the time by fifth-grade teachers). Loban's high-language-ability children used considerably more movables than did his low-language-ability children in the first two grades, but not in grades three through seven. Consequently, it is possible that some threshold is broken here by these low-ability children, or possibly teacher language could have some effect--not forgetting that Loban's low-language-ability children may as easily have improved because of their interaction with high-language-ability peers.

In future research, elements within structural patterns need to be expanded considerably to take in verbals and adjectivals as well as adverbials (movables) and nominals. The addition of verbals and adjectivals would make the internal sentence elements almost complete and add considerably to the present knowledge. Movables were used differently by teachers than by children, and it is probably that verbals and adjectivals would also. They at least provide a fruitful area for detailed study of the actual influence of teachers' language as a model for children. One or more of these segments could be elaborated for detailed analysis of teacher-pupil classroom language interaction and provide an adequate starting place for a study of teachers' influence upon children's language.

Another area of greater difference in obtained scores for teachers and pupils is the subordination index. For this measure of grammatical complexity, Loban found that children showed an increase on this adjusted scale from .019 for kindergarten children to .030 for sixth-grade children. Teachers in the present study had adjusted scores of .044 (second grade) and .045 (fifth grade). From the high subordination indices of teachers at both levels, one must conclude that their language complexity is not adapted to the language complexity of the children with whom they are working. No decisions can be made about the effect of this higher complexity level upon the children. Whether one or the other is too high for a grade level is impossible to tell. To what extent either group of children can profit from the teachers' language model is also difficult to tell. Further research needs to account for the verbal comprehension of the children and to analyze the teacher-pupil language as measured by the subordination index to make any conclusions concerning the real value of this comparison.

More knowledge definitely is needed about both children's language and about teachers' language before suggestions for teacher preparation programs can progress beyond vague (and possibly false) generalities about the importance of teachers' language as an example for children. That everyone is agreed concerning the importance of oral language learning as a specific language arts skill is clear. Language structure underlies all learning in this curricular area. Four major educational organizations (Mackintosh, 1964) have recently published a joint statement attesting to the importance of oral-language development as a distinct function of the education of children. In many respects, the road is clear. There are many activities that can be undertaken to stimulate oral language growth. Yet, these seem almost to be pedagogical chicanery if the language of the child is already structurally equal to that of the teacher. True, there is much style to be learned, much vocabulary to be mastered, and much thinking capability to be developed. But if structure of the language is in any way related to cognitive development in children or to their language learning itself, then clearly the structure of the teacher's language as it effects children's speech and cognitive development must be given careful attention.

To restate, the apparent language similarty of teachers and pupils does not mean that teachers do not exert some influence upon language development. Teachers do provide opportunities for language use by children. Teachers' vocabulary range appears greater; their use of subordination appears greater; their use of movables seems more varied. But the assumptions that have been made about the language differences of school children and teachers bear careful scrutiny if the results of this study, tentative as they may be, are to have any meaning in the school curriculum. It seems almost axiomatic to state that in the rush to develop wonderful visual aids and better books, the primary source of "school learning"--the teacher and his language-have not received necessary attention. To neglect this vital aspect would be wasteful of the single most used source in the school.

Speculations on Linguistic Structure and the Act of Teaching

Ryans (1963), p. 416) noted that one serious impediment to understanding teacher behavior has been the failure of researchers to realize the long period of investigation which must be given over to the identification of components that constitute teaching and to the study of their interrelationships. The present study has sought to describe one of the components of the communication process in teaching, the linguistic nature of the messages transmitted by the teacher. This step seemed to be a logical and crucial one in attempting to understand how communication occurs in the classroom. The information thus obtained must, in addition, be fitted into the developing theories and models of teaching. Some possible relationships between the present study and several theories and models, consequently, are suggested.

Smith's perception-diagnosis theory (1963) suggests that teaching involves a cycling process in which the teacher is continually perceiving pupils' behavior, diagnosing pupils' behavior, and then acting on the basis of the diagnosis. Such behavior is ordinarily verbal and thus has a linguistic structure that can be describe it. This structure, in turn, mediates pupils' perceptions of the teacher's behaviors, their diagnosis of what the teacher requires of them, and their consequent behavior. It would thus seem important that this behavior be identified and its non-erratic or predictable limits identified. Thus, if the teacher's linguistic behavior can be coded and classified by its linguistic nature, a model of the teacher's cycling behavior in the Smith theory conceivably might be generated from it. For instance, if the communication units of a teacher can be classified under this theory into basic sentence patterns, the verbal behaviors might be interpretable as kinds of cycling moves and provide objective validation of Smith's theory.

An example of the availability of this kind of cross coding is easily transferable to the Observation Schedule and Record (OScAR) (Medley and Mitzel, 1958) which could easily have been generated from Smith's theory. The (K) set of the OScAR categories is used to classify all the verbal behavior of the teacher into seven apparently exclusive sets: teacher non-verbal support of learner, teacher learner-supportive statements, teacher problem-structuring statements, teacher neutral comment, teacher directive statements, teacher hostile remarks, and teacher hostile non-verbal behavior. To hypothesize a high correlation between certain kinds of sentence structures and the kinds of meaning categories outlined in the OScAR seems possible. For example, learner-supportive statements might conceivably be highly correlated with the 1-(2)-5 sentence pattern, teacher directive statements with both requests and commands and so on, thus offering not only a means of empirically validating the categories, but also offering a way for teachers and student-teachers to more effectively control the kinds of statements that they employ in the classroom. Such cross pollenation effects might reveal vagueness in the OScAR categories and enable extension and other revisions of the basic system.[23]

Ryans' information system model (1960) suggests that teacher information processing which ends in teacher behavior is influenced both by the capabilities and characteristics of the teacher (e.g., behaving style) and by conditions external to the teacher (e.g., learning media, behavior to be learned). The processing itself consists of (a) processing, analyzing, and classifying the data, (b) preliminary decision processing relating to goals, tasks, etc.,

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[23] The investigator in reading the transcripts found it rather difficult to see just how some of the teacher dialogue could be classified within the OScAR without additional subdivisions. For example, calling on a person or calling out his name may conceivably fit into several categories at the same time. Even presuming that one type might dominate leaves some doubt as to the validity of the OScAR coding for all teacher dialogue. This prospect highlights the semantic nature of the OScAR and the desirability of relating linguistic constructs to message of the teacher comment itself.

(c) decision making, and (d) execution of the behavior. All of these are influenced by the feedback both of the teacher's own behavior and the students' behavior. Ryans then suggests that, in the formal teaching-learning situation, facts, concepts, and rules relating to cognitive, affective, and psychomotor behavior are assembled, organized, and programed for convenience by means of some medium such as the teacher or the textbook.

The teacher as medium ordinarily means that the teacher is communicating information to the learner in some form of a linguistic code. Identifying the correlates of that code would make possible the exploration of the relationships between the code, and the objects and events which it describes. Ryans noted the dependency of communication process upon the common past experiences of both the teacher (sender) and the student (receiver). They must have a common linguistic code if this model is to be workable at all. Consequently, linguistic study seems to offer some means of exploring empirically the validity of communication elements within the information-processing model.

Looking at the teacher as problem-solver, Turner and Fattu (1960) espoused the belief (a) that teacher-classroom behavior consists of responses that are instrumental in bringing about a goal in the form of desirable pupil behavior, (b) that the teacher creates a problem for himself when he seeks a specific pupil response, (c) that effective teachers can successfully transfer problem-solving abilities to new situations, (d) that skill in problem solving depends upon ability to acquire instrumental responses and on the ability to utilize information in order to select appropriate instrumental responses in a given situation, (e) that ability to acquire instrumental responses depends on the teacher's learning ability and on a climate of autonomy during early years of teaching, and (f) solving teaching problems can be estimated by simulation. It is conceivable that factors related to problem-solving are verbally resolved by the teacher in most instances and may be categorized linguistically in lieu of a more direct cognitive description indicating the process.

However, this kind of cognitive structuring might be more aptly viewed at this point in terms of a conceptualization (Smith et al., 1960) of teacher maneuvers, called strategies, and their components, logical operations. The latter are consistently verbal and consistently based upon the kinds of questions teachers ask. Logical operations are the responses to problems in Turner and Fattu's model (1960) or the action taken on the basis of diagnosis in the Smith theory (1963). These logical operations apparently do not account for all teacher language that should be accounted for. For example, in so far as his model has been explained, elliptical expressions[24] (classified under partials in the present study) that are questions or commands have not appeared in this "episodes"--units of segmentation. Further, the criterion measures of the logical operations give no consideration to operations that conceivably might be handled without questions. For instance, a second-grade teacher could analyze a situation, set up a response and, without any questions,modify the students' behavior by providing content information. Teachers do not always give directions or ask questions, In trying to motivate a student to continue reading, one teacher in the present study simply made a statement: "The clown in the story does some interesting things to Jack later in the story." She solved the problem (children not reading) by utilizing a 1-2-4 pattern, while some other teachers probably would have said "Read to the end of the story," or "Why don"t you see what the clown is doing to Jack?" The first quotation may or may not elicit greater responses on the part of the children, but in the incident mentioned, it was enough to set them to reading. And it does not appear as a logical operation.

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[24] An elliptical expression is generally defined as a sentence with an essential part missing in actuality but easily identifiable from context.

The linguistic questions that have been discussed are barely representative of the basic questions that might be generated about linguistic structure as a variable in reserach on teaching. Current models, theories, and methods of working at teaching need to be evaluated in terms of the linguistic "screen" through which they all must come. Some might falter under examination; most would be enhanced or reinforced by such comparison. But no one can suggest the reasons for observable teaching behaviors without first considering that they might be dependent upon language structure, structure that itself might be related to individual teacher characteristics rather the than to modifiable teaching strategies.

The Need for Research

The previous discussion has pointed out the need for research on a number of questions related to the teaching of the language arts and to the continuing inquiry into teaching behavior. Generally, from the foundation that this study and those on children's language provides, it is now possible to explore the relationships between teachers' language and children's language and to determine the effects of this relationship upon children's language learning and upon communication in the classroom.

Specifically, the investigator recommends both extension and replication of this study using teachers at different grade levels, with adequate control of the content of the classroom discussion. The state of linguistic description is such that the author recommends the undertaking of teacher-child interaction studies at the earliest possible time with one major qualification: the criterion measures need to be given more careful scrutiny by both linguists and educational researchers. Time and again as the investigator was attempting to make the criteria operational, he was confronted with inconsistencies in the application of the criteria in the researches reported to date. And although the Linguistic Conference held at Indiana University in 1958 (Strickland, 1962) was an initial step in coordinating language research of the quantitative type reported here, there does not appear to have been any effort made to carry through such coordination of what appears to be a rapidly developing area of research interest. If such coordinating decisions are not made soon, the criterion measure differences are going to make both replication and comparison impossible. There is vision in what has been accomplished to date, but vision can turn into nightmare.

Concluding Statement

This research has described the language of second- and fifth-grade teachers. It has demonstrated the feasibility of analyzing teachers' language using the same linguistic criteria found appropriate for children (Loban, 1963). For exploring teacher-pupil linguistic interaction, similarity of criteria is most necessary. Perhaps the most salient outcomes were the basic description of teachers' language and the application of correlational analysis, a method not used in previous linguistic studies. The former revealed that there does not appear to be much difference in the structure of teachers' language or in the diversity of vocabulary at second- and fifth-grade levels. The latter revealed relationships between the variables used to describe the teachers at each grade level that would seem indicative of grade level differences.

However, such research has only touched lightly the surface of a hugh deposit of linguistic information that is so stratified and so pervasive in schooling that it seems to defy attempts to isolate it and to harness the power that it demonstrably has in the hands of a skilled user. The task for those who would understand it is great, for they must first learn to use the tools by which it can be mined. Language is indeed, the most prominent unseen shaper of what happens to children in school. To fail to make every effort to understand all its facets in all media by which children are taught is to fail to accept the primary power which has been assigned to it.

APPENDICES

APPENDIX A

RESEARCH EQUIPMENT

Field Equipment

An omnidirectional lavalier microphone attached to a compact FM wireless transmitter was worn by the teachers in this study. The microphone was suspended from the neck on a lavalier cord and attached by a two foot cord to an FM wireless transmitter. The transmitter, modified by the addition of a belt clip for easy wearing, was worn on a belt, on a skirt top, inside the skirt, or in a jacket pocket. In cases where this was not possible, it was looped over the shoulder. The antenna attached to the microphone was approximately two feet in length and was either worn around the waist or allowed to hang free (wrapping it around the transmitter or taping it to the microphone cord created static). Generally, teachers were asked to remove beads or other decorations that would cause extraneous noise on the tape. The microphone used in this study was sufficient only to pick up the teacher's voice and the voices of children close to her.

The receiving equipment used in the field consisted of an FM tuner, sterophonic recorder, rabbit ear antenna, and monitoring headphones. The tuner was attached by bolts to the lid of the tape recorder for ease in transporting. The receiving equipment was usually carried within buildings upon any push cart available. Ordinarily it was sufficient to have the receiving equipment somewhere within 150 feet of the teacher being recorded. Unfortunately, faulty fluorescent light equipment or interfering transformer conditions required that the equipment be moved to within thirty feet of some classrooms. Where more than one teacher was being recorded in a building, the receiving equipment was positioned in a central place to avoid moving it if the distances were short enough. However, this desirable operating plan was infrequently employed.

Seventy-five feet of extension cord and two "cheater" cords with 120 volt three prong adapter and 250 volt three prong adapter were also necessary equipment. (The 250 volt plug was on a 120 line.)

The use of a stereophonic recorder permitted securing on a 2400 foot tape as many as six forty-minute sessions. All recording was done at 3-3/4 i.p.s.

Transcribing Equipment

A sterophonic tape recorder equipped with headphones and foot control pedal was used to transcribe the tapes and, in addition, to determine the time of each session and to code the phonological units.

Purchase of Equipment

All capital equipment used in the study was purchased for the Bureau of Educational Research, Kent State University, through the office and budget of Dr. Glenn H. Brown, Dean for Research, Kent State University. Supplemental purchases and replacement of microphones, transmitter, tapes, etc., stolen in the course of the study were borne by the Bureau of Educational Research, College of Education, Kent State University. The initial requisitions were forwarded by

Dr. O. L. Davis, Jr., Acting Director, Bureau of Educational Research. Later requisitions were forwarded by Dr. Philip Merrifield, Director of the Bureau of Educational Research.

Field Equipment Specifications

Microphone: Altec A 686 Lavalier Dynamic Microphone
Frequency response: 70 to 20,000 cycles
Output impedance: 30/50 and 150/250 ohms
Output level: -55 dms/10 dynes/cm^2
Pickup pattern: Omnidirectional pickup pattern
Hum: -120 db (Ref.: 10^{-3} Gauss)
Dimensions: 1-1/16" diameter at top, tapered to 3/8" at cable entrance, 3-1/2" long
Cord: 2 ft., equipped with plug for IMP-2
Weight: 3 oz.
Cost: $45.45

Purchased 11/64 from Electronic Engineering Company, Akron, Ohio

Transmitter: Kinematix IMPII FM Wireless Transmitter
Tunable: 88-108 mcs.
Range: 175-225 ft.
Frequency response: 30-20,000 c.p.s.
Input impedance: 1000 ohms
Dimensions: 3" x 1-1/8" x 2-3/4"
Weight: 7-1/2 oz. (with case)
Power: Mercury battery #TR-126, transistorized
Cost: $39.95

Purchased 11/64 from Electronic Engineering Company, Akron, Ohio.

Tuner: Lafayette LT-100WX, AM/FM Tuner
FM sensitivity: 3-uv.
Frequency response: 20-20,000 c.p.s., ±1db.
Harmonic distortion: Less than 1% at 400 c.p.s.
Dimensions: 12-5/8" x 4-7/8" x 9-1/2"
Power: AC-50-60 c.p.s., 110-115 volts, 40 watts
Weight: 15 lbs.
Equipped with AFC, AM loop antenna, terminals for AM and FM antenna
Cost: $49.95

Purchased 11/64 from Lafayette Radio Electronics, Akron, Ohio

Tape Recorder: Lafayette RK-155 wx 4 Track Stereo Recorder
  Frequency response: 40-18,000 c.p.s at 7 1/2 i.p.s.; 40-12,000 c.p.s. at 3-3/4 i.p.s.
  Amplifiers: 4 transistors, 7 tubes, full-wave bridge rectifier
  Signal to noise ratio: 45kb; interchannel separation 45 db or better
  Wow and flutter: Under 0.4% at 3-3/4 i.p.s.
  Bias and erase: 80 KC
  Controls: Pause; 2 record buttons w/ safety interlocks, rewind/stop/play, stop/fast/forward; two 4" x 6" speakers; tone control switch; stereo/mono speaker switch; 3 volume controls; 4 input jacks; 6 output jacks
  Power: 117 volts 60 cycles AC
  Size: 15-3/4" x 7-1/2" x 11-1/4"
  Weight: 34 lbs.
  Cost: $169.95

Purchased 11/64 from Lafayette Radio Electronics, Akron, Ohio

Recording Tape: Lafayette Mylar Base Recording Tape in 1800 ft. (1 mil) and 2400 ft. (½ mil) lengths

Cost: 1800 ft. for $2.25e; 2400 ft. for $2.79e (quantity prices)

Purchased when needed from Lafayette Radio Electronics, Akron, Ohio

Additional Equipment:
  Mono-headset: Trim dependable headset; 2 K ohms, DC
    Price: Approximately $7.00
  Rabbit ear antenna
  Antenna jacks
  Splicing tape

Transcribing Equipment Specifications

Tape Recorder: Tandberg Model 64, 4 Track Stereo Tape Deck
  Frequency response: 3-3/4 i.p.s., 30-15,000 cycles (± 2 DB, 40-11,000 cycles)
  Multiplex recording: Via FM-MX filter input for direct record through system at 3-3/4 or 7-1/2 i.p.s.
  Playback outputs: 1.5 volt cathode follower output, each channel

Wow and flutter: .2% RMS at 3-3/4 i.p.s.
Crosstalk rejection: Better than 60 DB
Signal to noise ratio: At least 55 DB
Monitoring: 3 separate heads--erase, record, playback
Inputs--sensitivity and impedance: Two microphones--
    .00125 volt RMS, 5 megohm; two high level--.05 volt
    RMS, 1 megohm; two FM stereo multiplex, 28 kohms
Bias and erase frequency: 80 to 100 kc, common bias
    supply to each recording channel
Dimensions: 16" x 12" x 6"
Weight: 25 lbs.; with carrying case, 30 lbs.
Power: 115 volts, special 220 volts available; can be changed
    for 50 cycle operation
Cost: $522.50 (with carrying case)

Purchased 11/64 from Electronic Engineering Company,
    Akron, Ohio

Additional Equipment:
    HMY-2 Telex headset; cost, $11.90
    Tandberg Model 64 foot switch; cost, $18.00

Both purchased 11/64 from Electronic Engineering Company,
    Akron, Ohio

APPENDIX B

SAMPLE TRANSCRIPT

The following is an actual transcript obtained from one of the participating fifth grade teachers. All words are those of the teacher. Children's speech is indicated by the triple asterisk.

The first two pages are set up for analysis as defined in Chapter II.. Because color coding is not possible here, the following additions and/or modifications were made:

1. Column headings include: movables (Mov.); communication units and number of words in each communication unit (CU); sentence patterns (Sent. Pat.); subordination index (SI). No mazes occurred on the first two pages; therefore, the column for mazes is omitted.
2. Movables in the transcript are underlined, with a letter "M" above. The movable code at the side is as follows: 1--word; 2--phrase; 3--clause; 4--combination.
3. Subordinate clauses are enclosed in parentheses. Numbers above the parentheses refer to the weighted subordination index as defined in Table 2 on page 42. The totals at the side allow 1 point for each subordinate clause and in parenthesis, the total number of points for all clauses in the sentence.
4. Complements are underlined, with a numeral "4" above the head word.
5. Subjects are underlined, with a numeral "1" above the head word. Subjects of commands are written in parentheses above the verb of the sentence and are preceded by the numeral "1". Of course, these pronouns are not counted in the total number of words in the communication unit.
6. Sentence components which are not analyzed but which do aid in the assignment of sentence patterns are not underlined, but the numbers identifying them are written above.

Mov.		CU	Sent. Pat.	SI
	Sssh #+	1-1	10	
	* * *			
•	Collect what //+	1-2	10	
	* * *			
	1 2 4 M			
1	Oh, I'll collect these later #+	1-5	2	
	* * *			
	1 2 (I) 4			
	Okay I think (we're all back now) boys	1-10	2	1(1)
	1			
	and girls #+ So will you get your	1-8	7	
	4 M 1 2			
1	spelling book out //+ And we'll do	1-10	2	
	4 M			
2	our final test in spelling right now #+			
	* * *			
	M 1 (you) (1 + 1)			
1	Please be sure (that you get your	1-13	9	1(2)
	spelling test in the right place) #+			
	* * *			
	1 M			
1	Why don't you go down and let	1-18	7	
	4 M			
3	Mrs. H put something on (as soon			
	(1 + 1)			
	as spelling is over) #+ All right //+	I-2 9-69	10	1(2) 3(5)

Because you probably want something 1-10 10

on it D____ #+ What J____ //+ 1-2 10

* * *

1 4
Does someone have a pencil (that J____ 1-9 7

can borrow) //+ 1(1)

* * *

All right J____ #+ Boys and girls, 1-3 10

remember what I said about the pencil 1-14 10

jar the other day //+ The same red 1-13 1

1 2 M (1)
2 pen is in there (that was lost the 1(1)

1 2
other day) #+ But nobody's returned 1-7 2

4 1 M
1 any of those pencils #+ I just don't 1-32 2

2 4 (1)
think (we should put any more pencils

(1 + 1)
in the pencil jar until we learn that

(1 + 2) (1 + 2)
it's something that we borrow from and

(1 + 2) (1 + 2)
that when we borrow, we should return) #+ 6(15)

Because it doesn't do us any good to 1-15 10

9-105 8(17)

have a pencil jar if it's empty. It's for emergencies when you forget yours, or it breaks and then we're in the middle of something. P_____?

* * *

Well, I don't know what happened to the pink pencil. It isn't in there now. T_____?

* * *

How about T_____? She needs one too.

* * *

D'you have another one?

* * *

Boys and girls, if you realize when you start school in the morning that you don't have a pencil, you'd better try to do something about it before it's time to start something. All right. Now. Be sure you have your lesson in the right place. Final test twenty-two. Okay. Ready? Number one. "Higher. That hill is higher than this one. Higher." Number two. "Ordered. The policeman ordered the man to go. Ordered." Number three. "Spoke. Eileen spoke to her friend. Spoke." Number four. "Although. I could not do it although I tried very hard. Although." Number five. "Attend. Did you attend the football game? Attend." Number six. "Rush. We read of the gold rush in the eighteen-sixties. Rush." I should have said eighteen-forties, shouldn't I? I'm thinking about what we're studying. Number seven. "Settle. The boys will settle the argument. Settle." Number eight. "Lower. Jack slept in the lower bunk.

Lower." Number nine. "Though. Bob felt as though he were lying on the floor. Though." Number ten. "Screen. He put a new screen in the door. Screen." Number eleven. "Pleasure. People go sailing for pleasure. Pleasure." Number twelve. "Seventh. What is the seventh word? Seventh." Number thirteen. "Point. Did you get the point of this study? Point." Number fourteen. "Blanket. A blanket of snow hid the ground. Blanket." Number fifteen. "Nurse. Jane had a nurse when she was ill. Nurse." Number sixteen. "Death. We read of the man's death. Death." Number seventeen. "Blood. Ida gave blood to the Red Cross. Blood." Number Eighteen. "Hero. He was a great football hero. Hero." Any question about the first eighteen words? B____?

* * *

Number ten was "screen." "He put a new screen in the door." Any other question? B____?

* * *

Number sixteen was "death." "Death." Any more? Okay. Review sentence. "We saw the wheat harvest on our journey." "We saw the wheat harvest on our journey." "We saw the wheat harvest on our journey." G____?

* * *

Number three is "spoke." "I spoke to him." Any other question, boys and girls? All right. Will you put your pencils down then. Pass your writing book to the person in front of you. Spelling book, pardon me, to the person in front of you. Collect in your group. And will you put the books back on the vacant desk back here by the bulletin board. C____, get the books checked at lunch time, and this afternoon, you can you can see how your team did. This is the fourth lesson out of six, so we're in the home stretch. Just next week and then one more review. And next week we have a short week. I think though that if if any of you want to, you may take home a list of words. But I think starting on Tuesday if we do exercise A and B on Tuesday, and then have go ahead and have our trial test on Wednesday, that most of you will be able to keep up with that. And if there's anybody who thinks they want to study them, that thinks they have to study a little harder, why, in study hall, take the book along today. Ask me for it. And make yourself a list of the maybe hard words next week. And then on next Friday we will have to make a list to take home because we'll have to have our test on Thursday rather than Friday week after next to get all of them finished by grading time. Just two more lessons after this one and this contest. J____?

* * *

Well, all right. J____ brought up the thought for the week that we haven't discussed. And ah it has been up here. It was up here last week and we never got around to it. And I don't like to take it down until we do get a chance to talk about it. I think everybody probably has noticed it. J____, did you have something you wanted to say about it since you put your hand up?

* * *

Who does have something they'd like to say about it? What does it mean? What does it mean? What do you think, B____?

* * *

The thought says: "Today is the tomorrow you worried about yesterday." Who else has some thought on that besides B____. She started us off. J_____?

* * *

You're thinking that maybe in a way it goes back to that thought we talked about about don't put things off, put them over? Remember that one? Don't put things off, put them over? Sometimes we keep putting them off and say, oh, I'll do it tomorrow, I'll do it tomorrow. And tomorrow comes and then tomorrow, as it reminds you, is the today that you were worrying about yesterday, and yesterday you said I'll do it tomorrow and here it is today already.

* * *

What do you think, L____?

* * *

If you keep putting off something until tomorrow, until tomorrow, until tomorrow, does it usually get done? Remember when we talked about that never put things off. We talked about that then. But you know, boys and girls, I think another thing this thought's saying to us is that sometimes we worry about things too much. We worry about them far more than they're worth worrying about. Somebody else has said I have a lot ah a lot of troubles I worry about, or I have enough troubles to worry about, but sometimes do the things that you worry about ever happen? For instance, ah I can give you an example of the sixth grade spelling bee. The sixth graders were awfully worried about that spelling bee coming up today I'm sure.

And now since Mr. W____ is still ill, we're not having it today. We're going to save it until Tuesday. And they did an awful lot of worrying last night about something that they really didn't need to be worrying about. You see? So a lot of times we worry and worry about something that isn't worth all our worrying. Sometimes we worry too much. Well, let's get our writing books out. Do our writing lesson. Be sure that you have your book, practice paper, and your pen.

* * *

Yes. On these arithmetic papers that you had before we went to gym, boys and girls, I do want to ah get those back because I'm afraid if you keep them something will happen to them, and we won't have a record of them. So get them out when you're getting your writing book out. Oh, J____, please don't keep that book in your desk. What did I say about my book? You may take it to your desk, but don't keep it in your desk. Keep it back on the table please. It's too big for the inside of your desk. I don't want the cover to get spoiled. So you have two things to be sure you have out besides your writing materials. Get the arithmetic paper out that we were talking about before we went to gym. Pass that along the edge of the row then. M____ around to B____. T_____ around to J_____. R___, all the way around to J_____. All the way around. On on papers that are not heavy, I think we'll pass around this way. Heavier things like the spelling books we'll pass up. But things that are not heavy I think we'll pass around. I've been doing that in the sixth grade and I think it works better.

* * *

Yes, T____.

* * *

Pardon?

* * *

Who?

* * *

Well, it came out all right. I added them up and I got thirty in all of them. That's what I should have had.

* * *

What, G____?

* * *

Oh, I'm sorry. I took it out of your desk because I wanted to check part four. Now is there anyone who has not given me their arithmetic paper? I'll just say one thing about these arithmetic papers and then we'll talk about them again later. I think that you could see that we didn't have very many people who got them all right or missed one or two. The bigger numbers were coming down as more problems missed. So now that I have the scores turned into the office for that purpose, the best thing for us to do, the best way for us to get [illegible] something out of this test and to learn something about it is for me to give back your papers another day next week. Also give back the test and we'll go over the problems and find out what in the world caused you to miss so many. And find out if there's some place where you're especially weak, like maybe story problems, or division, or multiplication or subtraction or fractions, whatever area it might be.

And then break up into some smaller groups and let the people who are weak in one area work together and the other people like we are in English on our parts of speech, 'cause this, boys and girls, remember, was a test over all the arithmetic we'd had for the first half of the year. But this is just part of what we're supposed to know. See, this is what we should know now. And then we have all the things we're learning the second half of the year. So maybe some of us need a little more work on some of these things from the first half of the year. J____?

* * *

Well, I think perhaps we're going to have to have our spelling bee this afternoon, J____, because since we took the first period on these arithmetic papers, before you know it it's going to be arithmetic time when the bell rings. So I think maybe we'd better wait until this afternoon. Then that will give some of you a little chance in study hall to study. But for sure we'll have it this afternoon because we have to get our winner. All right. On our writing lesson now, on Tuesday you practiced your writing. Let's look for a minute. Here you have a list of men's names. I wonder what we know about these men? Before we begin writing it in our book, let's talk about it for a minute or two. Who knows something about the first man? Has anyone heard of him before? Robert Morse. No one's heard of him? Who'd like to find out something for about Robert Morse for us. Not a great big long report, but just find out who he was and why he was important. Do that, oh in about ten minutes in study hall and then tell us when we get back from study hall this afternoon.

Just a short report. T____, would you do that for us? All right. Remember, just a short report about who he was and why he was important. How about the second man? Patrick Henry. What do you know about him? T_____, what do you know about him?

* * *

What was it? What are his famous words.

* * *

Um.

* * *

You just had it turned around Pat, ah T_____. "Give me liberty or give me death." Ah when did he have occasion to say that? What caused Patrick Henry to say that? P______?

* * *

Yes. You remember. All of you remember him, I'm sure. The Revolutionary War. And the meeting you were talking about, remember, was the meeting of the Virginia House of Burgesses. Remember? And the governor said they could not meet in Williamsburg where they usually met. So remember, they went to a church.

* * *

St. John's Church in Richmond, had a secret meeting and Patrick Henry was letting the king know that he didn't intend to do what the king said. How about the next man on the list. What do you know about him. E____?

* * *

William Penn, the founder of Pennsylvania. Of what religious faith was William Penn?

* * *

Okay. I think we all remember him. How about the next one, C____?

* * *

Who was Daniel Boone?

* * *

Yes. Remember we studied about all the things Daniel Boone did to help open up what states. What states did he really help to open up, J____?

* * *

And _____

* * *

Yes. His home state. How about Lord Baltimore. What do you remember about him, L____?

* * *

Founded what?

* * *

Couldn't hear you. All right. The founder of Maryland. Remember Lord Baltimore. And how do we know? What memorial do we have to him today in the state of Maryland to help you remember that he was the founder.

* * *

Yes. The capital of Pardon me. Not the capital but the largest city in Maryland, Baltimore. George Rogers Clark. Does anyone know anything about George Rogers Clark. I think this name is one that we haven't studied about like Robert Morse. Who'd like to find out something about him just for a short report this afternoon.

B____? All right. Fine. How about Roger Williams. Oh, we know. J_____ remembers him. All right, J_____. Refresh our memories.

* * *

Remember J_____'s poem about Roger William, the founder of Rhode Island. And William Bradford. Now we mentioned him. Think hard. We mentioned him. William Bradford.

* * *

Very first governor of the Plymouth colony. So every single one of these men are famous men in American history. And I think that we talked about all of them and studied about them except Robert Morse and John Rogers Clark. So girls, when you look up the report, just remember, we just want to know why they're important just very briefly. Okay? And as soon as we get back from study hall, you can share it with us. D_____?

* * *

Who's D____ Who's D_____ getting ah Daniel Boone mixed up with?

* * *

Yes. I know lots of times the stories about Daniel Boone and Davy Crockett get mixed up because they were both famous pioneers and they both ah did a lot of things and they both have a lot of stories told about them, a lot of exaggerated stories. And so it's easy to get them mixed up. But it was Davy Crockett at the Alamo, D____. All right. Now let's see what we're supposed to be doing in our lesson here. What are the capital letters that the book wants us to work very hard on this week. T_____?

* * *

Do you see any problems with writing these letters? Look at our letters up here. The capital B, the capital R, and the capital P. Really these are pretty easy letters, aren't they? There aren't any special hooks or loops or anything in these letters which give us trouble like in some of the other letters. And you'll notice that there are a lot of these letters in this week's lesson. Be sure you have your practice paper out from Tuesday. And as I come around, be sure that you have a row of P's, B's, and R's for us to look at. And after you're sure you have your rows of those three letters, then you may start recording in your writing book. D_____?

* * *

You must have been absent Tuesday. Wonder what we should remind ourselves about our positions when we're writing. Who can tell me? What should you we remind ourselves of.

* * *

What else.

* * *

What else.

* * *

What about your book and your paper.

* * *

Okay. There are some good reminders. Now everyone's reminded you. D_____? B_____, could you loan D_____ a piece of paper please? Is that all the paper you have, E_____?

* * *

Well, I didn't buy that to do practice writing lessons on. That's to write your assignments on from study hall. You'd better ah Well go ahead and finish it now that you've started. But you'd better arrange to get some more paper.

* * *

No. See, G_____ didn't have part four checked. I knew that.

* * *

Well, he had everything checked but part four.

* * *

Well sure. That's how many took the test, thirty. We should have had thirty on every one. Except I only had twenty-eight on part four because two people didn't have theirs graded yet.

* * *

No. Be sure when you make your P that you don't get a loop in the side. Look on your capital P. No loop. See, in your small P you have that loop but not in your capital P. Boys and girls, look at the board for a minute. Make your capital P. Start your swing up, down, back up on the same line. No loop in the capital P. Some of you are getting it confused with the small P where you do have your loop. No loop in the capital P. R_____, how can you write if your paper is not out of your notebook and flat on your desk. That isn't your best writing position. What happened here?

* * *

All right, J_____. You may put yours in your writing book. You should take your paper out of your notebook. See, you've got that big slant there and all through the paper. Check your spelling on "Daniel."

* * *

Yes, D____?

* * *

Pardon?

* * *

I think the big thing you're doing is trying to put too much of a loop here. A curve really. That isn't a good one. Actually, they_ put this this in here. But that part's too fat. These are all. T______?

* * *

Oh, I think they If this is a little bigger, if this part, see, comes and meets, this is what this does. See what it meets, where the loop meets and you have a space in between here. If you Be sure that it meets there. Anyone need any help?

* * *

How did that happen? When did that happen?

* * *

In gym? Did you fall?

* * *

Well, then, you did fall.

* * *

Who's he?

* * *

Did you tell Mr. B____?

* * *

Well, I know. But did you tell Mr. B____ that you fell?

* * *

Well, you should have. And then he would have sent you right then, 'cause you should have something put on there. As soon as writing lesson is over, go on down.

* * *

Yes. Go ahead. Is this your best handwriting?

* * *

My goodness. I can hardly read it. Slow down. Whoa. Wait a minute. How about all these great big circles here? What did I Remember when I put the P on the board? Make one like I put on the board, B_____. I know everybody writes a little differently from everybody else, but if you start putting that great big circle there, pretty soon you're not going to whether it's a G or a B or So be a little bit more careful or we won't be able to read it. That's the important thing, that we can read it.

* * *

Um hum?

* * *

Let me see. It seems pretty good, G_____. Hum?

* * * (Morning announcements)

J_____?

* * *

She said the five one's and the five _____

* * *

Three's. The five one's and the five three's. You see, the reason there was to be no game today was because if the spelling bee was on, we'd have to have time to set the chairs up. But since we don't aren't having the spelling bee, we don't need the chairs up and now the boys can play at noon.

* * *

Well, she's bringing you the news, isn't she?

* * *

If you haven't started to put it in your writing book, boys and girls, please start now.

* * *

What's the matter, J____.

* * *

Your D? Well _____

* * *

Who had their hand up over here?

* * *

You can start bringing it in Tuesday. Boys and girls, be sure you have everything filled up to this lesson. If you've been absent any Friday, sometimes you forget about writing. And that's one thing I told you you could just go ahead and make up on your own in study hall or sometime before school because you don't need me there to help you make it up. So be sure you have every single lesson filled in up to lesson twenty-three, which would be for next week. Why did you put the numbers beside them?

* * *

What about William or Patrick Henry, the end of his name. What did you forget?

3

* * *

And what did you forget here?

* * *

And what did you forget here?

* * *

Hum?

* * *

Now, three things you forgot.

* * *

So what does that tell you about this lesson, D____, how you did it?

* * *

Too fast. Slow down and pay more attention to what you're copying. After all, we're not having a race. Right?

* * *

And let's look back here for a minute and see what's happened to your writing grades.

* * *

See, some D's. This is one step below this. Now I haven't graded any of these, but this one certainly doesn't look like your best.

* * *

At all. So if you want to get that grade back up, you're going to have to work a little harder.

* * *

Boys and girls, if you do make a mistake, if you start to write the wrong letter, remember what we said. It's better to just go ahead than to do a lot of scratching out. If you're writing a note to someone, think about the appearance of it. Think about how it should look. And it's much better just to draw one line through something or start the draw a line through that letter that's incorrect than it is to make a great big scratched-out mess. And besides, that isn't good for your pen point. Remember. Remember when we learned about how the end of the pen is made, the point of it? And if you drop it on the floor or press too hard, you're going to cause it to spread apart? And then it will not write correctly. D_____?

* * *

Can't get "Clark" on there? Well, I just wouldn't put it on then. I'd just put a capital C and a period. Wonder what you might be doing if you are finished writing your writing lesson.

APPENDIX C

PREPARATION OF TRANSCRIPTS AND CODING PROCEDURES

Transcripts

When the classroom sessions had been tape-recorded, a transcriptionist typed manuscript copies of each session. Since the investigator had decided to attempt coding directly upon the transcript, the teacher-dialogue was triple spaced on the transcript with a three and one-half inch left margin.. Over 1500 pages of transcript were typed. The transcriptionist played every tape and made ink corrections directly upon the transcript. This procedure was most important because of the general habit of transcriptionists to make "automatic" corrections to standard usage (i.e., omitting superflous words, adding prepositions, writing "going to go" when "gonna go" was used, etc.) The transcripts then contained every word used by the teachers.

Once this was accomplished, a timer-clock was used to obtain as precise timing of the actual tape-sessions as possible. (Tape slippage and uncorrelated tape recorders made precise timing impossible.) The best estimate of timing-error was plus or minus thirty seconds obtained on repeat timing of three tapes. When transmission interference occurred, the time was adjusted to correspond to the time of clear transmission. (In one case, there was a five minute interlude of Dave Brubeck on a tape. Apparently, the investigator had failed to turn on the FM-AFC.) When the interruptions in class instruction were normal (i.e., older children entering the room, the principal talking over the loud speaker, the teacher stepping into the hall to talk to the principal), the timing was not adjusted. When the teacher was talking but no children were present, her words were deleted.

The tapes were then used for the coding of the phonological units on the transcripts. They were not used again except for checking reliability. However, during the phonological coding, the coder did check for errors in transcription.

Coding

Standard symbols of linguistic analysis were used in this report (see pages 26-36). Additional coding was done using a combination of symbols and colors:

? in brown was placed above all questions

"C" in purple with sentence underlined in purple was used for commands and requests

"P" in red with sentence underlined in red was used for passives

All partials were striped with green "see-thru" felt tip pens

All subordinate clauses were striped with pink "see-thru" felt tip pens

All movables were striped with yellow "see-thru" felt tip pens and placed in red parentheses

Complete subjects were striped with blue pencil

All complements were blocked out with a black felt tip pen

Numbers for sentence component parts were brown

Numbers for sentence patterns were red

Numbers for movables were red

Numbers for subordination index were blue

Numbers for communication units were ordinary pencil

Numbers for word counts were ordinary pencil

Phonological unit marks were green

Communication unit marks were red

For the vocabulary diversity, the 500 words selected from each sample were typed on adding maching tape. Each one hundred word group was then color striped for future analysis: pink for first 100, green for second 100, yellow for third 100, black for fourth 100, and blue for fifth 100. The words were then cut apart. All like words were then stapled together and the different stacks counted to obtain the vocabulary diversity count.

APPENDIX D

Trends Reported in 1965 Study

The trends reported for Group I in the 1965 study are reported below:

Trends Across All Teachers

1. Teachers who use more words (1)* use more words in communication units (3).
2. Teachers who use a greater average number of words in communication units (4) use a greater average number of words in mazes (7).
3. Teachers who use sentence pattern one (10) more make use of sentence pattern two (11) more.
4. Teachers who use more words (1) and/or more words in communication units (3) use more complements (16-18) and also more phrase and clause movables (22-23).
5. Teachers who use more complements (16-18) use more phrase and clause movables (22-23).
6. Teachers who use sentence patterns one (10) and two (11) more, use more words (1), use more words in communication units (3), use more complements (16-18) and use more word, phrase, and clause movables (21-23).
7. Teachers who use more words in communication units (3) use sentence pattern two (11) more, and more words in mazes (6).
8. Teachers who use more phrases as movables (22) use more words in mazes (6).
9. Teachers who use more words in communication units (3) use sentence pattern one (10) more.
10. Teachers who use more nouns as complements (16) use more words (1), more words in communication units (3), more mazes (5), and more words in mazes (6).
11. Teachers who use more clauses as complements (18) have a higher subordination index (9).
12. Teachers who use more words as movables (21) use more phrases as movables (22).
13. Teachers who use more phrases as movables (22) use more clauses as movables (23).

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*Numbers in parentheses refer to numbers assigned to variables in Tables 11 to 13, pp. 69, 71, 73.

14. Teachers who use more nouns as complements (16) use more pronouns as complements (17).

15. Teachers who use more pronouns (20) as subjects use pattern one (10) more and clauses as complements (18) more.

Directional Trends

1. Second-grade teachers who have a greater vocabulary diversity (8) have fewer mazes (5), a smaller frequency of sentence pattern seven (13), and a smaller frequency of nouns as complements (16).

2. Second-gtade teachers who have a greater average number of words in communication units (4) use sentence patterns one (10) and three (12) more.

3. Second-grade teachers who use sentence pattern three (12) more, use a greater number of words (1), a greater number of words in communication units (3), have a greater number of words in mazes (6), have a higher subordination index (9), make greater use of sentence pattern two (11), and a greater use of movables (21-24).

4. Second-grade teachers who use a greater number of questions (13) use a fewer number of commands (19).

5. Second-grade teachers who use more pronouns as subjects (20) use more mazes (5) and a greater number of words in mazes (6).

6. Second-grade teachers who make a greater use of sentence pattern seven (13) make lesser use of nouns as subjects (19).

7. Second-grade teachers who use more combinations as movables (24) use more clauses as movables (23) and more pronouns as subjects (20).

8. Second-grade teachers who score higher on the subordination index (9) tend to use fewer nouns as subjects (19).

9. Second-grade teachers who use more commands (14) tend to use fewer questions (13).

10. Fifth-grade teachers who have a higher vocabulary diversity (8) have a lower average number of words in communication units (4) and a lower average number of words in mazes (7).

11. Fifth-grade teachers who use more mazes (5) and more words in mazes (6) use sentence pattern nine (14) more.

12. Fifth-grade teachers who use sentence pattern three (12) more tend to use nouns as subjects (19) more.

13. Fifth-grade teachers who use sentence pattern seven (13) more use clauses as complements (18) more, clauses as movables (23) more, and pronouns as subjects (20) more.

14. Fifth-grade teachers who have higher vocabulary diversity (8) use sentence pattern three (12) more.

15. Fifth-grade teachers who use nouns as subjects (19) more use nouns as complements (16) more, and combinations as movables (24) more.

Opposite Trends

1. Second-grade teachers who use more communication units (2) use a fewer number of different words (8), while fifth-grade teachers who use more communication units (2) use a greater number of different words (8).

2. Second-grade teachers who use sentence pattern three (12) more have a greater average number of words in mazes (7), while fifth-grade teachers who use sentence pattern three (12) more have a lesser average number of words in mazes (7).

3. Second-grade teachers who have a greater number of partials (15) use fewer different words (8), while fifth-grade teachers who have a greater number of partials (15) have a greater number of different words (8).

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